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FAULTY FOOD IN RELATION TO GASTRO-INTESTINAL DISORDER *

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I have to thank you for the great honor you have done me in inviting me to deliver this lecture. For one whose work has for the most part been carried out in remote corners of the earth, it is at once a pleasing privilege and an educational experience to find oneself in this great center of scientific advancement. For it would be difficult to conceive of conditions more dissimilar than the isolation under which my investigations were for the most part carried out and the stimulating activities of the research institutions of this great city. Those of us whose work lies east of Suez must often pay the penalties which isolation entails, and not the least of these is dissociation from intercourse with our fellow workers in the West. It was, therefore, with a vivid consciousness of my own shortcomings—both inherent and environmental—that I accepted your president's invitation to deliver this lecture.

I count myself favored also, in that the lectureship is associated with the name of Mr. Mellon, who, by endowing it, has done much to encourage investigators still to continue the tillage of the financially unprofitable fields of medical research.

SCOPE OF THE LECTURE

I propose in this lecture to propound the thesis that much of the gastro-intestinal disorder of civilized peoples at the present day is due to faulty food. In doing so I shall present evidence of the incidence of such disorder among civilized communities and of its comparative absence among certain races living under more natural conditions; and contrast, in general terms, the food habits of the former with those of the latter. I shall refer to the special relation of perfect food to the functional perfection of the gastro-intestinal tract; and from these sources advance presumptive evidence of the effects of faulty food in impairing the functional perfection of the digestive system. Experimental evidence of these effects will then be given, and attention directed to the applicability of the experimental results to the genesis of certain acute and chronic gastro-intestinal disorders. Finally, I shall argue that faulty foods capable of causing similar effects in man to those produced experimentally in animals are widely made use of at the present day. Having thus introduced the subject to your notice I shall leave you to examine for yourselves in the wards, the clinic and the home the truth of the doctrine I have propounded.

PREVALENCE OF GASTRO-INTESTINAL DISORDERS AMONG CIVILIZED PEOPLES

It was recently stated by a public health administrator in England that 25 per cent. of all patients seeking relief at our clinics did so for gastro-intestinal disorders. So far as my memory serves me, the statement was made in order to emphasize the necessity for a study of the etiologic factors concerned in the production of this great mass of sickness. It has, too, been pointed out within the last few months that the alarming increase of cancer among town-dwellers in Great Britain is due, in the main, to the increasing prevalence of gastro-intestinal cancer. These are facts of such public concern that they demand the close attention of all students of public health; for if by any means we can prevent gastro-intestinal disorders we shall relieve civilized communities of one quarter of their sufferings.

In the fascinating pursuit of pathogenic organisms as causes of disease, we are apt to overlook the claims on our consideration of sufferers from noninfectious maladies—the claims, for instance, of the dyspeptic or of the sufferer from colonic disease. Possibly this is due to the fact that the dyspeptic rarely dies of dyspepsia nor the subject of colonic disease from colitis. Their discomforts, not being catching, are no more to their neighbors than a source of irritation; consequently their claims on the consideration of the hygienist are overshadowed by the multitude's demand for the elimination of the microbe. The multitude does not know, and we ourselves often forget, that the activities of the microbe as a pathogenic agent are very often dependent on those very conditions of life which give rise to the discomforts and sufferings of the victims of such maladies as indigestion and mucomembranous colitis. It is these conditions of life and of imperfect nutrition which frequently prepare the soil of the body for the rank growth of bacterial agents.

Fortunately, within the last few years the attention of investigators of disease has been directed into new channels of inquiry, channels which take cognizance of the influence of negative factors in the production of disease as well as of positive factors. As is usual in any new development, advance has been made along narrow lines; but the stream of knowledge has gradually broadened, so that we are beginning to appreciate the wider significance of the negative factors in the

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production of disease in general. Chief among them is food deficient in some ingredient essential to the body's well-being, such, for instance, as vitamins, suitable protein, iodin, phosphorus or calcium. It sometimes happens that one such essential is present in the food in insufficient quantity. Then metabolic harmony ceases or becomes discordant and "deficiency disease" results.

It is necessary to emphasize that "deficiency disease" is a question not merely of deficiency of vitamins, but of deficiency of any essential requisite of a perfect food. Nor is this all, for in practice deficiency of one essential often means excess of another; such, for instance, as relative deficiency of vitamin B in the presence of an excess of starch, or relative deficiency of iodin in the presence of an excess of fats; the excesses may themselves give rise to relative deficiencies of other essentials, and especially of those present in the food in relatively small quantities. Lack of balance of the food is a fault second only in importance to actual want of some essential ingredient. The food faults encountered in practice are thus often compounded of deficiencies in association with excesses.

The importance of adequate food-balance is illustrated by even the purest of "deficiency diseases," such as scurvy, concerning which Pitz and Lewis have shown that adequate provision of other food essentials will delay in guinea-pigs the onset of scurvy, induced by lack of vitamin C, and prolong their life. The same is true of other deficiency diseases, such as polyneuritis columbarum induced by lack of vitamin B. My own researches have impressed the importance of perfect food balance on me with increasing force within the last few months, since I have been able to show that an excess of fats or of unsaturated oleic acid in the food may cause a relative deficiency of iodin and enlargement of the thyroid gland (goiter). It is necessary also, in this connection, to recognize a further fact, namely, that one cannot in practice dissociate from the effects of deficient and ill-balanced foods those of bacterial or protozoal agencies whose ravages have been made possible by the faulty food. My remarks today, therefore, are to be considered from these broader aspects, namely, of food deficiencies in association with food excesses, and with the fortuitous intervention of microbic or other pathogenic organisms.

Fig. 1.—Gastro-intestinal tract of control monkey killed on one hundred and fourth day of experiment, fifteen hours after last meal. Stomach and midcolon empty, cecum loaded, lower bowel containing small amount of fecal matter. Bowel evacuated before death.

FREEDOM OF UNCIVILIZED RACES FROM GASTRO-INTESTINAL DISTURBANCES

In considering gastro-intestinal disease in the mass, the realization is forced on one that since it is so common it must have a very common cause. It is helpful, in endeavoring to ascertain the cause of a malady widely prevalent in one community or race, to contrast the conditions of life of such a community with those of another that is free, or comparatively free, from the malady in question. My own experiences have afforded me this opportunity in the case of gastro-intestinal disorders. For some nine years of my professional life my duties lay in a remote part of the Himalayas where there are located several isolated races far removed from the refinements of civilization. Certain of these races are of magnificent physique, preserving until late in life the characters of youth; they are unusually fertile and long lived, and endowed with nervous systems of notable stability. Their longevity and fertility were, in the case of one of them, matters of such concern to the ruling chief that he took me to task for what he considered to be my ridiculous eagerness to prolong the lives of the ancients of his people, among whom were many of my patients. The operation for senile cataract appeared to him a waste of my economic opportunities, and he tentatively suggested instead the introduction of some form of lethal chamber designed to remove from his realms those who by reason of their age and infirmity were no longer of use to the community. Among another of these races, the custom which required an eldest son on pain of death to carry in a conical basket his aged and decrepit parents to the top of a high rock from which to hurl them to destruction has died out only within recent years under the protective influence of British rule; and the proverb "Every-man's basket for his son" still survives the custom.

During the period of my association with these peoples I never saw a case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis, or of cancer, although my operating list averaged 400 major operations a year. While I cannot aver that all these maladies were quite unknown, I have the strongest reason for the assertion that they were remarkably infrequent. The occasions on which my attention was directed to the abdominal viscera of these people were of the rarest. I can, as I write, recall most of them: occasions when my assistance was called for in the relief of strangulated hernias, or to expel the ubiquitous parasite *Ascaris lumbricoides*. Among these people the "abdomen oversensitive" to nerve impressions, to fatigue, anxiety or cold was unknown. Their consciousness of the existence of this part of their anatomy was, as a rule, related solely to the sensation of hunger. Indeed, their buoyant abdominal health has, since my return to the West, provided a remarkable contrast with the dyspeptic and colonic lamentations of our highly civilized communities. Searching for an explanation of this difference in incidence of gastro-intestinal disease in the two peoples, I find it, in the main, in four circumstances: (1) Infants are reared as Nature intended them to be reared—at the breast. If this source of nourishment fails, they die; and at least they are spared the future gastro-intestinal miseries which so often have their origin in the first bottle. (2) The people live on the unsophisticated foods of Nature: milk, eggs, grains, fruit and vegetables. I don't suppose that one in every

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thousand of them has ever seen a tinned salmon, a chocolate or a patent infant food, nor that as much sugar is imported into their country in a year as is used in a moderately sized hotel of this city in a single day. (3) Their religion prohibits alcohol, and although they do not always lead in this respect a strictly religious life, nevertheless they are eminently a teetotal race. (4) Their manner of life requires the vigorous exercise of their bodies.

FAULTY FOOD

Each one of these differences in the habits of my Himalayan friends, as compared with those of Western peoples, would form, in itself, a fitting subject for discourse; but I shall content myself with a brief consideration of the first two under the general heading of "faulty food." It is not that the races to which I have referred live under hygienic conditions superior, as to housing and conservancy, to those of the masses in the West. On the contrary, in both these respects their conditions of life are most primitive. Nor is it that in their agricultural struggles with Nature they have acquired any peculiar immunity to the effects of faulty food; they are, indeed, as susceptible as others to these effects, as the following occurrence illustrates: It fell out that the cultivable lands of one of these races were no longer sufficiently extensive for the increasing population. To meet this it was decided to colonize another tract which had never previously been cultivated. A dozen families were settled there, and they made shift to grow upon its granite and infertile soil such grains as they could. My attention was directed to their efforts, and more especially to the results of them, when ten out of twelve adult young men developed paralysis of the lower limbs due to lathyrism—a rare malady resulting from the disproportionate use in the food of the vetch *Lathyrus sativus*. These settlers, finding it impossible to grow a sufficiency of wheat, had cultivated the hardy vetch and used it in too high admixture with their scanty stores of wheat. The result was the development of paralysis of the lower limbs among the male population, while the female members of the settlement were unaffected. I mention this dramatic occurrence to show you that perfect physique and stability of the nervous system did not protect them from the effects of faulty food, and incidentally to emphasize the sex variations to be found in maladies resulting from food faults. For although in the case of lathyrism the difference in incidence of the disease in the two sexes is more marked than in any other nutritional malady known to me, yet it is in some nutritional diseases a very striking feature.

Fig. 2.—Gastro-intestinal tract of monkey fed exclusively for sixty-seven days on autoclaved food and onion. The animal died on the same day as her young, which was similarly fed. Note dilatation of empty stomach, cecum and large bowel; large ileac intussusception; and inert appearance of dilated colon. Intense colitis was present throughout the whole length of the viscus.

We see, then, that as exemplified by certain Himalayan races and, as I find from recent reports in the medical press, by such races as those of upper Egypt and northern Nigeria, enforced restriction to the unsophisticated foodstuffs of Nature is compatible with fertility, long life, continued vigor, perfect physique and a remarkable freedom from digestive and gastro-intestinal disorders, and from cancer. I must confess that with these examples before me I find myself in accord with Hindhede, who affirms—and on unequivocal evidence—that the two chief causes of disease and death are food and drink.

CONTRAST BETWEEN FOOD HABITS OF PRIMITIVE PEOPLES AND THOSE OF CIVILIZED COMMUNITIES

Let us now for a moment contrast the habits of these primitive people in respect to food with those of our more highly civilized communities. The former are content with natural foods: milk, eggs, grains, fruits and leafy vegetables—or, if their state of mind be not precisely one of contentment, they can at least not better their lot nor worsen it. These natural foods—"the protective foods," as McCollum has named them—provide in proper quality and proportion the proximate principles and vitamins necessary for nutritional harmony, and the proper vegetable residues for the healthy evacuation of the bowels. But the case is different with civilized man. No longer is he content with the unsophisticated foods made in Nature's laboratory, with "herbs bearing seed" and with "every tree in which is the fruit of a tree yielding seed." To him these are "still for meat," but preserved, purified, polished, pickled and canned. Some he extracts and distils with the object of procuring concentrates agreeable to his taste. His animal food he heats, dries, freezes, thaws and stores. One way or another by desiccation, by chemicals, by heating, by freezing and thawing, by oxidation and decomposition, by milling and polishing, he applies the principles of his civilization—the elimination of the natural and the substitution of the artificial—to the food he eats and the fluids he drinks. With such skill does he do so that he often converts his food into a "dead" fuel mass, devoid of those vitamins which are to it as the magneto's spark to the fuel mixture of a petrol-driven engine. Unmindful, too, or more often ignorant, of the composition of the fuel-mixture with which he charges his human machine, he joins deficiencies of some essentials with excesses of others, heedless that the smooth running of his bodily functions bears intimate relation to the ordered balance of these essentials.

I am not at the moment concerned with the circumstances of his civilization—expediency, penury, prejudice, ignorance or habit—which have compelled man into this dangerous course. It is sufficient for my purpose that these circumstances exist, and that, in consequence of the food habits they have fostered, normal bodily function cannot be sustained and gastro-intestinal function is one of the first to suffer. Let me emphasize this point: "Gastro-intestinal function is one

of the first to suffer." This truth is made manifest by the clinical evidences of disease that are first to appear in wild monkeys fed on deficient and ill-balanced food: loss of appetite, depraved appetite, vomiting, diarrhea, dysentery, anemia, unhealthy skin, asthenia, and loss of body-weight. If the faulty food be persisted in, other symptoms manifest themselves later, due, in the main to malnutrition of the central nervous system; but it is the gastro-intestinal tract, the functions of digestion, absorption and assimilation that are among the first to fail in consequence of faulty food. These are the signs that our ship is running upon the rocks and, as good pilots, we must be aware of them. I often think that we are apt to assume more readily the office of salvors of wrecks than of pilots whose function it is to prevent them.

But not only is functional failure of the digestive system an early evidence of faulty food, but the gastro-intestinal tract is often the first to exhibit clinical evidence of infection by pathogenic organisms in consequence of it. Let me illustrate this last point by an experience in my own laboratory: Thirty-six wild monkeys were captured in the jungles of Madras and transported with the least possible delay to my laboratory in the hills at Coonor. They were in perfect health and full of vigor—wild things usually are. I had in these animals perfectly normal tissues to work on: a unique opportunity to observe the first clinical and pathologic effects on normal tissues of the agent—faulty food—with which I was working. Each of these animals was placed in a separate cage, and all were confined in the same animal room. One attendant looked after them all. Twelve of them were fed on natural food, the remaining twenty-four on food deficient in some cases in vitamins as well as ill balanced; others were fed on natural food in which the living essences had been destroyed by sterilization. Those that were naturally fed remained free from intestinal disease; those that were fed on deficient and ill-balanced food and on sterilized food developed, within a short time in the majority of cases, diarrhea or actual dysentery. Here, then, is an unequivocal instance not only of the effect of faulty food in inducing a specific disease such as dysentery but of the protection against it that is afforded by a natural and well-balanced food.

Fig. 3.—Section of longitudinal band of muscle from colon of a healthy monkey.

RELATION OF PERFECT FOOD TO FUNCTIONAL PERFECTION OF GASTRO-INTESTINAL TRACT

Now let us consider for a moment the purposes which perfect food subserves. Every one recognizes that food is taken into the body to repair tissue waste, to supply energy, and to provide the proper medium for the chemical reactions of the body. But do we always visualize these functions of food in relation to the organs of digestion themselves, and to the work to be done by the gastro-intestinal tract? If we did, I think we should have no difficulty in realizing the special effects on these organs of an insufficient supply of proteins which rebuild the digestive tissues and make good their waste, or of those constituents of the food which supply energy for the production of the digestive secretions and the movements of food along the digestive tract, or of salts which provide the proper medium for the chemical processes of digestion, or of vitamins which activate the cells of the digestive system to healthy function. The effects of deficiency of these essentials must of necessity be manifested in failures of digestive, absorptive, assimilative and motor functions of this important region of the body. It is not necessary to make laboratory experiments to prove that if a woman lives on white bread, margarin, condensed milk and tea with a minimum of imported meat and boiled potatoes she is prone to suffer from such digestive disorders as dyspepsia and colonic disease. For such a diet does not contain a sufficiency of proteins to rebuild the tissues involved in digestion, assimilation and evacuation of the bowel contents; it does not contain a sufficiency of vitamin to activate the cells of the digestive system to healthy function; it is ill balanced, and by its excessive richness in starch it favors the development in the digestive tract of fermentative organisms, and makes relatively more deficient the vitamins necessary to healthy cellular action; nor does it contain a sufficiency of vegetable residue, of cellulose, waxes and vegetable salts, to insure natural action of the bowels.

EFFECTS OF FAULTY FOOD

Nor do we, I think, always consider the dependence of one constituent of the food upon another for its share in the maintenance of nutritional harmony. We know that if such essentials as protein and inorganic salts be not provided in adequate quality and quantity, growth must flag and repair of body waste must fail or cease; but do we realize that the utilization of suitable protein and of suitable salts is dependent on the presence in the food of a sufficiency of vitamins, or that the efficiency of vitamins is dependent in considerable measure on the adequate supply of these proximate principles? If the tissue waste of the gastro-intestinal tract be not made good—whether in consequence of insufficient supply of suitable protein or of its insufficient utilization—then must the production of digestive juices fail, the mechanism of absorption and assimilation flag, the neuromuscular control of the gastro-intestinal tract become inefficient and the tissues of the tract become the prey of pathogenic organisms. It is thus that such a nutritional disease as pellagra arises, and thus that the manifold varieties of gastro-intestinal disorder due to failure of digestive function may come into being.

It is unwise to consider any of the essential ingredients of food, whether proteins, carbohydrates, fats,

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salts, water or vitamins, as independent of the assistance derivable from their associates in the maintenance of digestive and nutritional harmony. No doubt, some of these have special relations to others, as for instance that of iodin to fats, that of vitamin B to carbohydrates, that of vitamin A to lipoids, calcium and phosphorus holding substances, and that of vitamin C to inorganic salts. But whatever be their special relations one to another they are all links in the chain of essential substances requisite for the harmonious regulation of life's processes: if one link be broken, the harmony ceases or becomes discord. Of late the science of nutrition has tended to assume a too "vitaminic" outlook, and it is well to realize that, important as these substances are, man cannot live on vitamins alone, nor can he live on proximate principles alone: each is complemental to the other, and deprivation of the one leads to starvation as surely as does deprivation of the other. Our knowledge of vitamins is still in the making, but it serves a useful purpose to have some mental conception of their function. I have likened it to the magneto's spark which ignites the fuel-mixture of a petrol-driven engine, liberating its energy: the spark is of no use without the fuel nor the fuel without the spark; nay, more, the efficacy of the spark is dependent in great measure on the composition of the fuel-mixture.

Fig. 4.—Section of longitudinal band of muscle from greatly dilated colon of monkey fed exclusively on autoclaved rice. Compare with Figure 3. Note great thinning of longitudinal muscle band, which is spread out at its margins over surface of circular muscle layer. Note also prominent chain of swollen ganglions, including four large oval ganglions lying between muscle layers.

EVIDENCE OF THESE EFFECTS

But if I am to succeed in demonstrating the truth of my claim that faulty food is responsible for much of the gastro-intestinal ill health so common at the present day, I must provide other than presumptive evidence of its effects on the digestive system and convince you also that foods having faults capable of causing these effects are nowadays extensively used by civilized communities. I propose, therefore, to fulfil the first condition by ocular demonstration and to rely upon my argument for the fulfilment of the second.

For some years past I have been engaged in a study of the effects of deficient and ill-balanced food on the various organs and tissues of the body, as observable in animals fed on such foods under experimental conditions. Having reached certain conclusions with respect to the digestive organs and gastro-intestinal tract in such animals as pigeons, rats and guinea-pigs, I repeated my experiments in wild monkeys captured in the jungles of Madras so that I might observe the effects of faulty foods on animals closely related to man. The foods I used were natural foods that had been rendered faulty by various means; they were of several classes:

1. Foods deficient in all three classes of vitamins, in suitable protein in fats and excessively rich in starch.
2. Foods deficient in vitamins B and C and excessively rich in starch and fats.
3. Foods deficient in vitamin C only, in vitamin B only, and in vitamins A and B, but well balanced in other respects.

These classes of food presented for my purpose an adequate range of deficiencies alone, and of deficiencies in combination with excesses; they include many of the food faults observable in the dietary of many civilized people at the present day. Before demonstrating the effects of these faulty foods on the digestive organs and gastro-intestinal tract, I must point out very shortly the simultaneous effects to which they give rise on the endocrine regulators of metabolism, the thyroid gland, the suprarenal gland, and the pituitary body; for it is to be remembered that the maintenance of healthy gastro-intestinal function is dependent in considerable measure on healthy endocrine action. It would carry me too far afield to develop adequately the latter theme: I content myself, therefore, with directing your attention to it, and with laying emphasis on the fact that it is necessary to consider in relation to the changes produced in the digestive system by faulty food those that are simultaneously produced by the same agency in the endocrine system. As an instance of this intimate correlation of digestive and endocrine function and disorder, I may refer to the simultaneous production by faulty food of colitis, of depreciation of liver function, and of suprarenal derangement. The first is the most obvious clinical feature of the nutritional disturbance induced by the faulty food; the occurrence of the second may serve to account for the toxic symptoms from which the sufferers from mucous colitis suffer, and for the opinion held by some that mucous colitis is due to hepatic insufficiency; while the third provides some insight into the effects of fatigue, anxiety and cold in precipitating attacks of mucous colitis in the malnourished subjects of colonic disease. The malady is, indeed, as much a disorder of the suprarenal glands as of the colon.

The data afforded by specimens indicate that the profound changes resulting in the gastro-intestinal tract in consequence of the various deficient foods employed are similar in kind in the three species of animals I used—pigeons, guinea-pigs and monkeys; it may be expected, therefore, that they will be similar in kind, if not in degree, in human beings whose dietaries have faults similar in kind if not in degree to those used in the experiments. I think there is good reason to believe that the prolonged use of a moderately faulty food will lead to them as certainly as the less prolonged use of a more faulty food. Without attempting to analyze them too closely or to attribute to each fault a specific effect we may, I think, draw from them certain broad conclusions:

1. The health of the gastro-intestinal tract is dependent on an adequate provision of vitamins. The absence of growth vitamins is capable of producing pathologic changes in the tract which frequently assume the clinical form of colitis. This observation is

of the highest importance in view of the frequency with which this malady is encountered at the present day. Deficiency of vitamin C is especially concerned in the production of congestive and hemorrhagic lesions in the tract, and evidences of these may be found in animals which have not exhibited during life any of the clinical manifestations of scurvy in noteworthy degree. A state of ill health of the gastro-intestinal tract may thus be a prescorbutic manifestation of disease due to insufficiency of this vitamin, especially when associated with an excess of starch or fat or both in the food.

2. The disorder of the gastro-intestinal tract consequent on vitamin deficiency is enhanced when the food is ill balanced.

3. The pathologic processes resulting in this situation from deficient and ill-balanced foods are:

(*a*) Congestive, necrotic and inflammatory changes in the mucous membrane, sometimes involving the entire tract, sometimes limited areas of it.

(*b*) Degenerative changes in the neuromuscular mechanism of the tract, tending to dilatation of the stomach, ballooning of areas of small and large bowel, and probably also to intussusception.

(*c*) Degenerative changes in the secretory elements of the tract—of the gastric glands, the pyloric glands, the glands of Brunner, the glands of Lieberkühn, and the mucous glands of the colon. These changes are such as must cause grave derangement of digestive and assimilative processes.

(*d*) Toxic absorption from the diseased bowel, as evidenced by changes in the mesenteric glands.

(*e*) Impairment of the protective resources of the gastro-intestinal mucosa against infecting agents, due to hemorrhagic infiltration, to atrophy of the lymphoid cells, and to imperfect production of gastro-intestinal juices. This impairment not only results in infections of the mucous membrane itself, but also permits of the passage into the blood stream of micro-organisms from the bowel.

Fig. 5.—Section of upper part of intestine from healthy pigeon.

(*f*) It is to be emphasized that the pathologic changes found in the gastro-intestinal tract are more marked in some individuals than in others; and that, while all of them may occur in one and the same subject, it is usual to find considerable variation in the incidence of particular lesions in different individuals.

APPLICABILITY OF EXPERIMENTAL RESULTS TO GENESIS OF GASTRO-INTESTINAL DISORDERS

With these evidences of the effects of faulty food before us, we have, I think, good reason to proceed with our investigation of the relation of faulty food to the common gastro-intestinal disorders of the present day.

It is usually accepted as a proof of the causation of a malady that if an investigator by one agency or another can produce in animals, under controlled experimental condition, the malady in question, then this agency is the cause of the disease, or intimately associated with its causation. Consider, then, that by means of faulty food, (1) diarrhea, (2) dysentery, (3) dyspepsia and gastric dilatation, (4) gastric and duodenal ulcer, (5) intussusception, (6) colitis and (7) failure of colonic function can be produced experimentally. I do not argue that they are invariably so produced or that faulty food is the only cause of them. I do not deny the influence of microbic or other pathogenic agents in contributing to their production; indeed, I have ever insisted upon it. But I do maintain that faulty food is often at the bottom of their causation, and that the use of natural or well-balanced food from birth onward will greatly militate against their occurrence.

I cannot remember that by means other than faulty food such a disorder as colitis can be so readily produced, if at all; for the experimental production of amebic dysentery by the oral administration of *Endameba histolytica* cysts is not at all convincing. On the other hand, I have seen amebic dysentery arise in deficiently fed wild monkeys, while others that were well fed escaped the disease although subjected to the same risks of infection. In this instance, malnutrition had enabled the specific organism to implant itself in the tissues of the bowel. If further evidence of the influence of faulty food in the production of these gastro-intestinal disorders be needed, it will be found in abundance in the medical history of the late war, during which these disorders were so often the consequence of faulty food. In this regard, our enemies have served unwittingly one useful purpose: they forced us to concentrate attention on the immediate and remote effects of food faults on the human body. But our ever present enemies in peace—poverty, prejudice, ignorance, habit—are no less responsible in this regard; they, too, beneath the vaunted culture of our civilization, inflict upon numbers of our people an intolerable load of misery, which it is our duty to relieve.

I would, therefore, urge on your attention a consideration of the effects of faulty food in relation to such acute disorders as infantile diarrhea, jail dysentery and asylum dysentery, asking you, while remembering the bacteriologic aspects of these maladies, to look on them also from the point of view of faulty food. The bacteriologic path has led us far in our knowledge of preventable disease, but it will lead us farther still if we traverse at the same time the paths of malnutrition that so often run parallel with it. In relation to such chronic disorders as "mucous disease" in children, chronic gastro-intestinal dyspepsia, pellagra sine pellagra, colonic disease in adults, celiac disease, gastric and duodenal ulcer, and chronic intestinal stasis, the food factor in their production deserves the fullest consideration; for if the facts I have laid before you do not provide the whole explanation of their genesis, they are, I am convinced, intimately related to it. Time does not permit me to develop this theme further. Full reference has been made to it in my recently published book, "Studies in Deficiency Disease," where many

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points which of necessity I have omitted from this lecture are set out.

EXTENSIVE USE OF FAULTY FOOD

Turning now to my last duty, that of presenting evidence that faulty food is largely used by many civilized people at the present day, I would ask you to consider first in this connection the increasing tendency in modern times to rear infants artificially—on boiled, pasteurized and dried milks, and on proprietary foods which are all of them vastly inferior to healthy mother's milk in substances essential to the well-being of the child—inferior not only in vitamins, but also in enzymes, thyroid derivatives and other essentials. When, as is sometimes the case, mother's milk is itself harmful to the child, is not this largely the result of her own disordered metabolism that in many cases results from improper feeding before, during and after pregnancy? For mother's milk may, like the milk of animals, be deficient in certain respects if her food be deficient. The milk of stall fed cows is not so rich either in vitamin A or in vitamin C as that of cows fed in green pastures.

Again, is not cow's milk—an important dietary constituent of young and old alike—gradually becoming a luxury reserved for the few? Vegetable margarins are replacing butter even among the richer classes. Fresh fruit, certainly in Great Britain, is a comparative rarity, even on the tables of the rich. Green vegetables are scanty, and such as there are are often cooked to the point of almost complete extraction of their vitamins and salts. White bread has largely replaced whole-meal bread, and it is notorious that bread forms a high proportion of the dietaries of persons of limited means. It is notable that, despite the food restrictions imposed upon the people of Belgium during the late war, the infant mortality and infantile diarrhea decreased greatly—a circumstance which was due to the organized propaganda encouraging mothers to nurse their infants, and to the establishment of national canteens which provided prospective mothers from the fifth month of pregnancy onward with eggs, meat, milk and vegetables. Again, fresh eggs are so expensive as to debar the masses from their use. Meat is at best but poor in vitamins, and its value in these essentials is not enhanced by freezing and thawing. Sugar is consumed in quantities unheard of a century ago, and sugar is devoid of vitamins which the cane juice originally contained. The use of stale foods involving the introduction of factors incidental to oxidation and putrefaction is the rule; that of fresh foods, the exception.

Fig. 6.—Section of upper part of intestine from pigeon dying in consequence of an autoclaved rice dietary. Compare with Figure 5. Note loss of staining characters; loss of lymphoid cells; congestion at bases of glands of Lieberkühn.

Can it, then, truly be said that the variety of natural foodstuffs consumed by Europeans protects them from any deficiency of vitamins? My own clinical experience justifies no such belief; rather does it point in the contrary direction. Nor does it appear to be the experience of the compilers of the Thirty-Eighth Report of the British Medical Research Council, who write: "From a consideration of dietaries consumed by the poorer classes in the towns of Great Britain, one is led to suggest that no inconsiderable proportion of the population is existing on a food-supply more or less deficient in fat-soluble factor"—deficient, that is to say, in a vitamin one of whose cardinal functions is to maintain the natural resistance of the subject against infections. That similar considerations apply in this country also appears from the experience of Osborne, who asserts that a large part of the food eaten by civilized people has been deprived of vitamin B by "improvements" in manufacture, and of Hess, who emphasized that latent and subacute forms of scurvy due to insufficient intake of vitamin C are common disorders of infancy.

But the frequency with which deficient and ill-balanced foods are used is most apparent when the dietetic habits of persons in subnormal health are considered. It will surprise those who study them to find how many there are, of capricious appetite, who habitually make use of foods sometimes deficient in calories—for it is not the food presented to the subject that counts, but the food eaten and assimilated—and often dangerously deficient in one or more vitamins, in protein of good biologic value, and disproportionately rich in starch or sugar or fats, or in all three. Infants fed on many of the proprietary foods in common use come within the category of the deficiently fed, unless deficiencies are made good. The food of young children is commonly low in vitamin content, and in suitable salts and protein, while it is frequently disportionately rich in starch and sugar—a circumstance which enhances the danger of vitamin deficiency. It may, indeed, be accepted as an axiom that the vitamin value of a child's food is reduced in proportion to its excessive richness in carbohydrates.

But the ranks of the deficiently fed include not only infants and young children; they include also those whose food is composed mainly of white bread, margarin, tea, sugar and jam, with a minimum of meat, milk, eggs and fresh vegetables. Even among those whose diet is more perfectly balanced, the commoner articles of food, as they are prepared for the table, are so low in vitamin value that, unless they are enriched with a sufficiency of natural foods in the raw state, they are prone to cause ill health, and especially gastro-intestinal ill health. Such is my experience in India, where this European patient "cannot digest vegetables or fruit," and never touches them, "as they carry infection," or that one "suffers so from indigestion" that he or she lives chiefly on custards and milk puddings; where milk is, of necessity, boiled and reboiled until, as a carrier of vitamins, it is almost useless; where meat is made tender by the simple device of boiling it first and roasting it afterward; where every third or fourth European child has mucous disease, the direct outcome of bad feeding. So it is that the forms of food which such as these so commonly adopt are those

most calculated to promote the very disorder from which they seek relief.

Access to abundance of food does not necessarily protect from the effects of food deficiency, since a number of factors—prejudice, penury, ignorance, habit—often prevent the proper use and choice of health-giving foods. Who in the ranks of practicing physicians is not familiar, among the well-to-do classes, with the spoiled child of pale, pasty complexion and unhealthy appetite, of sluggish bowel, and often with mucous stools or enuresis, who, deprived of the wholesome ingredients of a well-balanced natural food, craves for sweetmeats, chocolates, pastries and other dainties as devoid of natural health-giving properties as their excessive use is common? Constantly one encounters the anxious mother of the "highly strung," "nervous" child "of delicate digestion," whose ignorance of essential principles of feeding is only excelled by her desire to do what is best for her offspring; who, guided by the child's preferences, supplies the means to convert it into a static, constipated, unhealthy-

Fig. 7.—Section of upper part of intestine from pigeon dying in consequence of an autoclaved rice dietary; × 65. Note hemorrhages between muscularis mucosæ and base of crypts; atrophic glandular elements; eroded villus with blood track therefrom to distended subperitoneal vessel, constituting a direct passage for intestinal organisms to blood stream.

skinned adolescent, equipped with digestive and endocrine systems wholly unfitted to sustain the continued exercise of healthy function. Or, again, who is not familiar with the overworked anemic girl, static and with visceroptosis, acne or seborrhea, and oftentimes with vague psychoses, who ekes out a paltry wage for teaching, sewing or selling, satisfying the cravings of her tissues principally with white bread, margarin and tea? Or with the languid lady, devoid of healthful occupation, who, living in the midst of plenty, deprives herself, for some imaginary reason, of substances essential to her well-being? Or with the harassed mother of children, oppressed with the constant struggle to make ends meet, stinting herself that others may not want, exhausted by childbearing and suckling, worry, and too little of the right food? What wonder that such a woman is dyspeptic, and that "every bite" she eats "turns on her stomach." Some there are, living in luxury, whom ignorance or fancy debars from choosing their food aright; others for whom poverty combines with ignorance to place an impassable barrier in the way of discriminating choice. It is for us so to instruct ourselves that we may instruct such as these, and use our newer knowledge to the end that customs and prejudices may be broken and a more adequate dietary secured for those under our care. We may, in our desire to promote the health, vigor and fertility of our people, learn much from the practical farmer or stock-breeder whose experience has taught him that all these evidences of normal functional activity of the animal organism are dependent in the main on one great factor—perfect food supply.[1]

CONCLUSION

I trust that I have said enough to serve as an introduction to the study of this important subject, than which there is none more worthy of the consideration of those whose life is spent, or to be spent, in guarding the national health. It seems to me that in regard to it we have three obvious duties: the first, to instruct the masses as to what to eat and why they eat it; the second, to apply the results of our science to the production of natural foods in abundance and to their widespread and cheap distribution, rather than to the erection of institutions for the treatment of maladies due to their want; the third, and most important, ardently to pursue our investigations and the acquirement of knowledge. In no department of human endeavor are the words from the agrapha of Christ more pertinent than in their application to the study of the relations of food to health and disease:

> Let not him who seeketh, cease from seeking until he hath found:
> And when he hath found he shall wonder.

GIGANTISM WITH HEMORRHAGIC OSTEOMYELITIS OF A METACARPAL BONE *

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That general overgrowth, termed gigantism, is, in the main, brought about by a hyperactive secretory function of the anterior lobe of the pituitary body appears to be well established, such hyperfunction being due to hypertrophic or pathologic increase in the secretory structure of the anterior portion of the gland. Pathologic and anatomic evidence appears to lend general support to this point of view. One should recognize, however, that the disease, in its general deviation from normal processes, is perhaps the result of pluriglandular disturbances, with still other factors participating that are not yet understood, rather than the result of a pathologic condition of the hypophysis alone.

The address recently published by Cushing[1] on "Disorders of the Pituitary Gland" should have a sobering influence on those whose enthusiasm prompts

1. McCarrison, Robert: Studies in Deficiency Disease, Oxford Medical Publications, 1921.

* From the Medical Department of Gouverneur Hospital.

1. Cushing, Harvey: Disorders of the Pituitary Gland, J. A. M. A. 76: 1721 (June 18) 1921.

them to assume that so many of the ills that flesh is heir to are due in whole, or in part, to a disturbance or a pathologic function of the endocrinal glandular complex, to the disregard of other factors that may be present.

In his studies on gigantism and acromegaly, Cushing [2] says:

> The disease in short is the expression of a functional instability of the pars anterior, doubtless brought about by some underlying biochemical disturbance which leads to the elaboration of a perverted or exaggerated secretion containing a hormone that accelerates skeletal growth (of the long bones if epiphyseal union is incomplete) of the acral parts if epiphyseal ossification has taken place.

We report herewith an endocrinal case of so-called preadolescent hyperpituitarism, presenting all the stigmas of gigantism. Of great additional interest is the fact that the patient presents a localized lesion involving one of the metacarpal bones. The process in this bone gives all the clinical and roentgenographic criteria of a hemorrhagic osteomyelitis and may be regarded as evidence of reaction to a destructive or injurious process that has taken place in spongy bone. This reaction gives all the known criteria we possess of an attempt at repair, the lesion itself being the outcome of such incomplete or unsuccessful reparative effort.

In no reported case of gigantism are we able to find that a similar observation has been made. The question as to whether the localized bone lesion is a distinct process, having no connection with the patient's general skeletal changes, or whether it is a local expression of the general disturbance, and not merely coincidental thereto, for the present, must remain unanswered.

Hamann [3] has made some observations regarding bone changes occurring in hypopituitary disease. He reports a case of "cytoplastic osteitis" affecting the tibiae of both legs, which yielded to pituitary medication. He concludes that "osteitis osteoplastica," leontiasis ossea, and Paget's disease are due to a hypopituitary condition. He further assumes that hypopituitary cases all show a regressive condition in bony growth which may lead to cystic bone formation.

According to Horrax,[4] the course of the disease termed gigantism, which is apparently brought about in large degree by hyperfunction of the anterior lobe of the pituitary body, tends eventually to a hypofunction of the gland, such change expressing itself in weakness, hypotrichosis, impotence, adiposity and low body temperature. In our patient, epiphyseal union has not taken place; he is still increasing in stature. Hypotrichosis and adiposity are also absent. If there is any relation between the patient's general condition and the localized bone lesion exhibited in the hand, it seems fair to assume, in such event, the possibility that a new and early sign of perverted pituitary change has occurred in a case presenting the stigmas of hyperfunction of the anterior portion of the gland. While no argument really connecting the localized lesion observed in our case with hypofunction, hyperfunction or dysfunction of the pituitary body is advanced or may be advanced, it seems suggestive in view of the findings of other writers.

Gigantism is, of course, a condition of perverted function. We use the term perverted function advisedly, since we believe that the condition known as hypo-hyperpituitarism or dyspituitarism does not explain all the aberrant conditions observed in a disturbed pituitary complex.

Just as in other structures of the body, distinct secretory chemical reactionary change may be taking place without any apparent anatomic alteration in the glandular elements. We feel sure then that these so-called chemical reactions may disclose themselves in a variety of syndromes which cannot be classified under the general terms of hypo-hyperpituitarism or even dyspituitarism, although in the present state of our knowledge, we are unable to give demonstrable anatomic proof.

Fig. 1.—Patient, showing widened space between malars and spread nostrils; absence of hair on chest and abdomen; large genitalia; disproportion between size of hands and feet; prominence of ears.

Fig. 2.—Round back and backward displacement of os calcis.

REPORT OF CASE

History.—J. B., a boy, aged 16, born in Austria, the third of three children, and a silversmith, was admitted to Gouverneur Hospital, Jan. 28, 1921. His father was 60 years of age and more than 6 feet (182.8 cm.) tall. His

2. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912.
3. Hamann, Otto: Zur Aetiologie der Osteitis cytoplastica, Med. Klin. **16**: 63-64, 1920.
4. Horrax, G.: Oxford Medicine, London, Oxford University Press, **3**, 1921.

features were extremely coarse, and his lower jaw was rather prominent. He stated that the middle teeth of the upper and lower jaws were separated. He was fairly strong and active, working every day as a furrier. The Wassermann reaction was negative. The mother was short and stout. She said that she was in good health. No enlargement of the thyroid gland was felt. The Wassermann reaction was negative. One sister, aged 26, 5 feet, 2 inches (158 cm., tall, and an alleged cardiac patient, was married. The older brother, aged 24, was 6 feet, 2 inches (188 cm.) tall. His upper and lower teeth were crowded. He shaved only once during the week. His sexual organs were apparently normal. He stated that he had never had sexual coitus, but he believed that he was normal sexually. He had no thought of marriage, although he made good wages as a silversmith.

He came to America from Austria at the age of 8. Previous to his arrival, he had had double pneumonia and scarlatina. He stated that when he was about 12 years old he could not play with the other boys because he would tire easily and would become dyspneic and dizzy.

On his arrival, at the age of 8, he immediately started school and continued till he was 15. He was always the tallest boy in the class, and later became so overgrown that he was the target for the gibes of his classmates. Although he was an apt pupil, he became oversensitive about his size and left school when he reached Class 7 B.

During the last few years, the patient had been in comparatively good health. January 20, however, the day before his admission to the hospital, he became acutely ill with a cough, pain in the chest and epigastrium, dyspnea and fever. He was sent to the hospital with a diagnosis of pneumonia. This diagnosis was confirmed, but the condition was complicated by pluerisy and pericarditis with effusion. As his stay in the hospital was stormy throughout and was associated with numerous sequelae, we will dwell only on the endocrine phase, as seen from his pictures.

Examination.—There was no beard on the face and no hair on the chest or axillae. There was an effeminate distribution of hair on the pubes. The fingers were long and broad. He was more than 6 feet (183 cm.) tall and was still growing.

Fig. 3.—Enclosed sella turcica, enlarged skull and separated teeth.

Roentgenograms of the bones showed an old fracture at about the middle of the right fibula. A roentgenogram of the sella turcica showed nothing abnormal; that of the fifth metacarpal bone showed hemorrhagic osteomyelitis; that of the long bones showed a nonepiphyseal union. The extremities measured 92 cm. from the anterior superior spine to the internal malleolus. The tibia was 40 cm., the foot 28 cm. long. He wore a size 11 shoe. There was a posterior projection of the os calcis. He had a high soprano voice. The middle incissors were widely separated. Examination of the eyes, reported by Dr. Kearny, was negative, with no disturbances of the visual field.

Occasionally, there was a slight glycosuria. The blood sugar estimation on the fasting stomach was 0.148 per cent.

COMMENT

From these findings, it is fair to assume that this patient was suffering from a distinct change in the bony

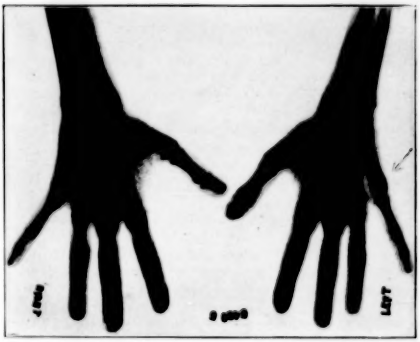

Fig. 4.—Hemorrhagic osteomyelitic lesion of fifth metacarpal bone and nonepiphyseal union of all bone.

structure of his body. These changes generally indicate a condition of gigantism. Although absolute proof of the direct association of hemorrhagic osteomyelitis and a disturbance of the anterior lobe of the pituitary body is lacking, there is in this case at least a greater degree of probability of such an association than a mere coincidence.

17 West Seventieth Street—15 East Forty-Eighth Street.

RADIUM TECHNIC IN TREATING CANCER OF THE ESOPHAGUS

PRELIMINARY REPORT

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Except for the aid of the fluoroscope, we are working in the dark when treating cancer of the esophagus. The fluoroscope will help us, if a stricture exists, by showing its location; but it can tell us nothing as to the thickness of the walls of the canal, and very little as to the extent of the lesion up and down. When the bismuth is swallowed, it will, of course, show as a dark bulging above the stenosis. The thin dark line below this point may continue to the cardiac end of the esophagus. But we cannot say that the entire area below the bulging is diseased, because of this seeming narrowing. From the few necropsies we have had in this class of cases, I am safe in assuming that the diseased area is from 1 to 2 inches in extent. It is quite probable that future postmortems will show cases that extend farther than 2 inches. The necropsies so far conducted will sometimes show one portion of the canal fairly thick, in which section, maximum dosage can be employed without fear of penetration, while contiguous to this thickened area, we may find the wall

to be very thin: so thin that the dose applied to the thick portion with impunity would produce dire results.

Therefore, it can readily be seen that the task set for radium in malignancy of the esophagus is, indeed, difficult. If we but knew the thickness of the walls, and the area of involvement, as in the case of carcinoma of the lip and cervix uteri, it would be an easy matter to decide on the dosage and length of exposure.

If our fear of penetrating the esophageal wall predominates, we are inclined to use a small dose of radium, which, while it will eliminate the penetrating factor, may do more harm than good in the end-results, because of the fact that while this small dose may favorably affect the diseased tissue directly contiguous to the radium applicator, the rays, because of the filtration in passing through tissue, may be so weak when they reach the outlying portion of the growth that they will act, not as a lethal agent, but as a distinct stimulant. Therefore, it can be seen that to produce the desired killing effect on the cancer cells, the dose of radium used must be one sufficiently large to insure a killing action, not only on cancer cells immediately surrounding the radium carrier, but also in the more distant portions of the growth.

Mills and Kimbrough [1] speak clearly of the difficulties encountered in properly applying radium to the canal of the esophagus. But even though we have as our aids only the fluoroscope, the dilators and the esophagoscope, and radium as the anticancer agent, we are accomplishing good results in a fair percentage of cases, so that now we need not consider carcinoma of the esophagus as necessarily fatal. It goes without saying that in cases that have metastasized, ultimate cure is not to be looked for. But by proper dilatation, and the judicious application of radium, these patients need not submit to a gastrostomy, as the canal can be kept open for the passage of food.

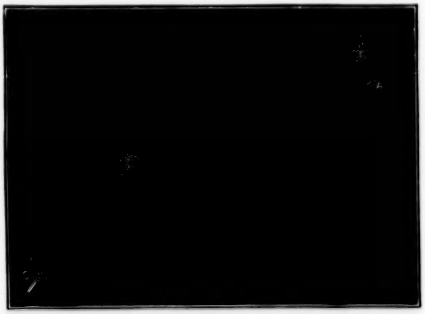

Fig. 1.—End of the piano wire (*D*) which is about 3 feet (900 mm.) long. At the end is the cone shaped tip (*C*), with a hole extending from the end of the shoulder. The silk thread has been swallowed: *A* is that portion coming out of the mouth. It has been threaded through the hole in *C*, and the end of the thread is held taut, while the piano wire is slid down and gently worked through the stricture. The wire should be passed the entire length of the esophagus and into the stomach.

Mills and Kimbrough [1] mention five requisites for the proper emplacement of radium in the esophagus:

(1) A knowledge of the location and physical peculiarities of the tumor and the resulting stricture, especially as to location, extent and direction of stenosis; (2) a means of effective and nontraumatizing canalization of the cancerous stricture; (3) a mechanical means of maintaining the radium in direct contact with the tumor; (4) a ready means of frequent observation as to the position of the radium during the period of treatment, and (5) a careful selection as to dose, filtration and frequency of treatment, guided by such experience as we have and the individual peculiarities of the case.

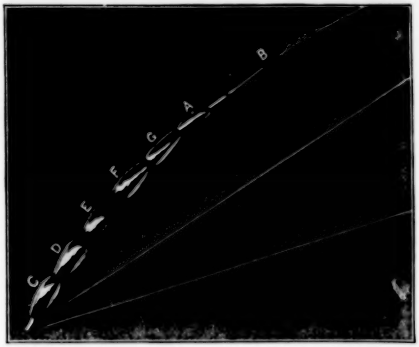

Fig. 2.—Several olivary bodies that have been passed over the piano wire: *A* is the smallest body and was passed down first, being propelled by the spiral wire pusher (*B*), which was then pulled up and off from the piano wire, and *C* and *D* sent down over the piano wire, point down, being gently pushed through the stricture by the spiral wire (*B*). *B* is then pulled up and off, and *E*, *F* and *G* sent down, bases first. After these have all passed the stricture, the piano wire is gently pulled up and the entire chain of olivary bodies is removed.

These five requisites will be considered according to my findings in a series of eighteen cases.

1. There are three methods commonly employed to determine the location of malignancy of the esophagus: (*a*) by the fluoroscope after the ingestion of bismuth or barium; (*b*) by sounding with olivary bodies, and (*c*) by esophagoscopy. In some cases, it is necessary to use all three methods. Except for the purpose of securing a section for microscopic examination, I do not favor the esophagoscope, as it is trying to the patient and there is danger of causing trauma. It is my custom to request a roentgenogram after bismuth, that the commencement of the stricture may be definitely located. This picture is used for reference during the subsequent treatment of the case. The patient is placed behind the fluoroscope, and an olivary body on the end of a spiral wire is introduced in the canal. When the olivary body comes in contact with the stricture, the position of the spiral wire at the point where it passes the incisors is marked with a piece of adhesive, and the wire is removed and measured from this point to the tip of the olivary body. This method gives a definite distance to work on, when the radium carrier is sent down. It must be remembered, however, that the diseased area probably extends some centimeters below the actual stricture, and allowance must be made for this in placing the radium. Unfortunately, except for the exact position of the stricture, we are in the dark as to the extent of the diseased area. Therefore, in our desire to include all diseased tissue in our irradiations, we no doubt attack healthy tissue in some of our treatments. But even if we do, I am inclinded to think that this is justifiable because of the fact that, if the healthy area is irradiated, it will repair itself after the

1. Mills, R. W., and Kimbrough, J. S.: Radium Treatment of Cancer of the Esophagus Under Roentgen-Ray Control, J. A. M. A. **74**: 1370-1376 (June 5) 1920.

period of engorgement and inflammation has passed, leaving no untoward sequelae.

2. If the stenosis is not extreme and will admit of a fair sized olivary body, very little dilatation of the stricture is required in preparation for the introduction of the radium carrier. This open canal, however, does not exist in the majority of patients seeking treatment, as the patient usually waits until swallowing is painful in the extreme, and the fluoroscope will show only a small trickle of bismuth through the stricture. In these

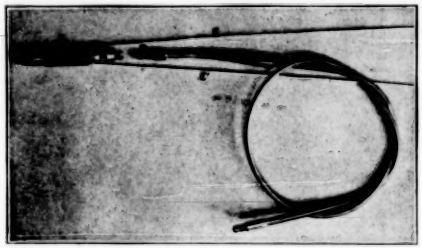

Fig. 3.—*A*, radium carrier. The radium is in the barrel of this tube; *B* is a screw cap with a depression in the top (*C*) to accept loosely the tip of the spiral wire (*D*); *E* and *E'* are double strings of heavy linen thread.

cases of extreme stenosis, I have had more success with a device popularized by Sippy, which will enter a stricture through which water will trickle. The device is made of piano wire about 3 feet long. On the end of this wire is soldered a small cone one-fourth inch long and one-eighth inch in diameter. From the tip end of this cone to the shoulder is a hole for the passage of a silk thread. A spiral wire tube fits over the piano wire, but cannot pass over the end because of the cone. On one end of this spiral wire tube is a screw that will fit into a series of olivary bodies. The device is used thus:

The patient swallows a silk thread (silk twist, letter D). This is accomplished by incorporating about a foot of the thread in a 5 grain capsule or a piece of soft candy. Twenty-four hours is usually sufficient time for the thread to pass through the stricture into the stomach and become anchored in the intestine. The mouth end of the thread is then threaded through the hole in the cone at the end of the piano wire, and drawn taut. The piano wire is then passed gently down the string and worked through the stricture. As a rule, this is easily accomplished. At this stage, the smallest olivary body is screwed onto the spiral wire tube and passed over the piano wire, down through the stricture. When this is done, the next larger olivary body is threaded over the piano wire, until three or four have been threaded on the wire, each one a size larger than the one preceding. The small ends of the olivary bodies are pointed down. At this time, three or four olivary bodies, beginning with one about the size of the last one threaded on the wire, are slid down the wire with their bases pointed down. The second series diminish in size, thereby making the greatest circumference in the middle of the complete set of olivary bodies. When these have all been passed through the stricture, the piano wire is removed, together with the olivary bodies. This dilator is very satisfactory as there is no danger of trauma, if it is manipulated properly. Even after the dilatation, patients will say they feel much better; but, of course, this is only temporary.

3. The maintaining of the radium in contact with the tumor is accomplished in various ways by different operators. I prefer the apparatus shown in the illustration. By its use, the patient is not troubled with the applicator and is barely conscious of its presence in the canal. After the applicator has been in position the required number of hours, it is easily removed by means of the attached strings. When the lesion is at the lower end of the esophagus, care must be taken that the carrier does not work down into the stomach. If this occurs, it can, of course, be removed, but only with considerable force, and injury of the walls may result. The objection to wires as the means of retaining the radium carrier in position is that much discomfort is caused the patient, and the patient cannot retain the radium as long as is desired. By using the radium carrier I have described, it is necessary only to verify the position of the carrier once with the fluoroscope.

4. After the radium carrier is in position, a roentgenogram is taken which will show clearly the position of the carrier. Six hours after the carrier has been placed, the patient should be placed behind the fluoroscope and given a small amount of fluid bismuth. Observations are then taken to determine if the carrier is still in the right position.

5. This requisite deals with dosage, screening, etc. My dose in treating cancer of the esophagus is based on empiricism. Without doubt, our dose would be different in many cases if the diseased esophagus was laid flat before us, for we would then know the thickness of the diseased area. We are compelled to select a dose that we have found will do certain things to tissue that has been under our sight. Therefore, I have

Fig. 4.—*D* inserted in hole *C* and held in position by traction on strings *E* and *E'*. In this position it is held while being passed over the base of the tongue and the commencement of the esophagus. When the fluoroscope shows that the carrier is in the stricture, the spiral wire (*D*) is pulled out, leaving the carrier in the stricture, and held in that position for any number of hours by the strings which are fastened to the cheek.

selected 50 mg. as the dose, and the time of exposure to each position from eight to ten hours. If we wish to irradiate 3 inches of the canal, we should start at the lower position, and at the end of eight hours we should pull the string up 1 inch, and at the end of another eight hours, we should pull it up another inch and so on. I always hope that I have gone deep enough into the surrounding diseased tissue, but not too deep.

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The radium carrier should be made of brass, gold plated, with a wall thickness of 1 mm. Rubber tubing of 1 mm. wall thickness should cover the barrel of the carrier. The object of using the rubber is to absorb the irritating secondary beta rays that are produced when the gamma rays emerge from the metal.

While the results of radium treatment of cancer of the esophagus are not all that could be wished for, yet they are of such a nature that we are hopeful for better things as time goes on.

In a series of fifteen cases, I can point to but four as seeming cures. I can say, however, that all patients were benefited by the first series of treatments. The dysphagia, which exists in almost all cases, is relieved

Fig. 5.—Radium carrier in the stricture. This cannot slip down, because of the heavy linen cord that is attached to the cheek.

very soon after the first treatments. This freedom from pain will continue for some time; but in the majority of cases it will return, and the second treatments will not have the same salubrious effect that the first did.

Still, a sufficient number to demand our intervention with radium are relieved by subsequent treatments. Of the series mentioned before, excluding the four that I believe are cured, five patients went one year without recurrence. One of the five had no recurrence for a year and a half. These five patients are still under treatment, and perhaps my percentage may be larger than I have stated here.

Chevalier Jackson [2] believes that there is a future for radium in malignancy of the esophagus. R. Walter Mills and John S. Kimbrough [1] conclude that "the treatment of cancer of the esophagus by radium is hopeful. The most encouraging feature in the small series of cases is the relief of dysphagia." These observers report a series of eleven cases treated with radium. "No case was treated that might be considered a cure, though one patient is alive and in good shape eighteen months after the first treatment, without evidence of metastasis. There was but one case in which there was evidence of metastases, and in that instance there was involvement of the stomach. Five patients have died, one possibly of perforation resulting from treatment. The work, instead of being gruesome, is made gratifying by the pitiful appreciation of the patient.

2. Chevalier Jackson (discussion).

SECOND TREATMENT

It is my custom to repeat the treatemnt in from three to four weeks after the first. In favorable cases, a roentgenogram taken just before the second treatment will show a larger lumen, and less irregular outlines. In this type of case, weight has been gained and the patients have a sense of general well-being. They are instructed to return for examination at the slightest sign of recurrence.

CONCLUSIONS

In the use of radium in the treatment of cancer of the esophagus, we have advanced more than a step. In a disease that was always fatal, we save a percentage of patients.

If radium did no more than relieve the dysphagia, it would be of inestimable value.

The majority of patients are benefited, and life is prolonged.

By dilatation and the proper application of radium, gastrostomy is avoided.

That a more perfect system of dosage is required is admitted.

31 North State Street.

MONGOLIAN IDIOCY IN ONE OF TWINS

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Mongolian idiocy in one of twins occurs so rarely that a report of such a case, with photographs of both twins at the age of 6½ months, seems of sufficient interest to merit publication.

REPORT OF CASE

Ettori L., a boy, aged 6½ months, was admitted to the Babies' Hospital, Aug. 11, 1921. The father and mother, who had been married nine years, were born in Italy; both were healthy; the former was 42 years of age and the latter 36 at the time of the birth of the twins. The first three pregnancies had resulted in healthy children, now 7½, 4½ and 3 years of age, respectively. These three children and one of the twins are of normal mental development. The fourth pregnancy, which was uneventful, resulted in twins. The mother stated that the infants were not weighed at birth, but that one infant (Ettori L.), who was born first, was but half the size of his twin sister. She further noted that "the whole top of his head was soft, down to the middle of his forehead." The infant had been nursed up to the time of admission to the hospital. He had never been acutely ill but did not thrive in the same manner as the twin sister, who gained regularly in weight. He had never been able to hold up his head, although the twin sister developed normally. Four days prior to admission, the stools became frequent and watery, and at the time of admission the child was drowsy and extremely prostrated.

On admission, the child was poorly developed and wasted, with soft flabby musculature. The general appearance was that of a mongolian idiot. The weight was 3,100 gm. (6 pounds, 13 ounces).

The measurements were: circumference of head, 15 inches (38 cm.); chest, 12½ inches (31.7 cm.); abdomen, 11½ inches (29.2 cm.); length of body, 21 inches (53.3 cm.). The skin was dry, loose and inelastic, showing evidence of dehydration. The head was rather flat. The anterior fontanel measured 1¾ inches (4.7 cm.) anteroposteriorly by 1¼ (3.1 cm.)

Fig. 1.—Mongolian idiot and normal twin sister at 6½ months

laterally. The posterior fontanel was open, roughly circular, and measured ¾ inch (1.9 cm.). The coronal and lambdoidal sutures were open. The parietal eminences were prominent. The eyes were distinctly mongolian in type, almond shaped and quite obliquely placed. The measurement between the inner angles of the eyes was 1 inch (2.5 cm.). The nose was broad and flat, the mouth wide with the tongue frequently protruding. The chest, lungs and heart were normal. The abdomen was normal except for a small umbilical hernia. The penis and scrotum were small. The testicles were undescended but could be felt in the inguinal canal. The reflexes were normal. The hands were broad and the fingers rather short. There was marked hypermobility of the hip and shoulder joints.

During the child's period of observation in the hospital a fever was constantly present, ranging from 100 to 102.5 F. There were frequent watery green stools and progressive loss of weight. The child refused its food. The routine procedures for treating dehydration were instituted, but the child died eight days after admission to the hospital, apparently of acute enteritis. There was no necropsy. The accompanying illustrations are reproductions of photographs taken four days after admission. At that time the patient's weight was 2,650 gm. (5 pounds, 13 ounces) and that of the normal twin was 5,445 gm. (12 pounds).

COMMENT

Since the original description of mongolian idiocy by J. Langdon Down,[1] in 1866, followed by the more elaborate treatise of Kassowitz [2] in 1902, there has been but small addition to our knowledge of this condition. No light has been thrown on the etiology. Attempts have been made from time to time to assign syphilis as a causal factor, but reports of positive Wassermann reactions in a certain number of mongolian idiots have never influenced the critical clinician. The extremes of age in either parent have also been considered an etiologic factor, but Goddard,[3] in an analysis of more than 290 cases, finds that "fathers may beget mongolians at any age from 20 to 63." He did, however, note that the number of children born when the mother was 40 years of age was much higher than at any other age. In a group of thirty cases reviewed recently by von Hofe [4] from the Babies' Hospital dispensary, the mother was less than 35 years of age in 47 per cent. I have had three cases in my private practice in which both parents were under 35. The belief that the age of either parent is a causal factor seems to rest on tradition and impression rather than fact.

Goddard rather inclines to the belief shared by many others that the cause of mongolism is to be sought in the condition of the mother during pregnancy. If the condition of the mother during pregnancy were related to the etiology, one should always expect the identical pathologic condition in both twins. Cases of mongolism in both twins have been reported by Hjorth.[5] One would not be surprised at such a result, in a twin pregnancy, if causes in the mother during pregnancy operated to produce the condition. The question of heredity can be excluded in this discussion, as mongolian idiots are not known to have children.[6] The question of etiology in this case might be explained by the following considerations: Two ova were fertilized by two spermatozoa. One of the ova was probably fertilized by a normal spermatozoon which resulted in the normal female infant. The other ovum may have been abnormal and have been fertilized by a normal spermatozoon or have been normal and have been fertilized by abnormal spermatozoa. This fertilization resulted in the mongolian idiot.

A partial review of the literature reveals only three other cases similar to this: one reported by Neumann,[7]

Fig. 2.—Mongolian idiot and normal twin sister at 6½ months.

another by Swanberg and Haynes,[8] and the third quoted by them and reported by Shuttleworth.[9] Cases

1. Down, J. L.: Observations on an Ethnic Classification of Idiots, London Hosp. Rec. **3**, 1866.
2. Kassowitz, M.: Infantiles Myxoedem, Mongolismus und Mikromelie, Vienna, 1902.
3. Goddard, H. H.: Feeble Mindedness, New York, the Macmillan Company, 1914.
4. Von Hofe, F. H.: A Report of One Hundred and Twenty-Four Cases of Mongolian Idiocy, to be published.
5. Hjorth, Bodil, quoted by Swanberg and Haynes: Nyt Tidsskrift for Abnormvaesenet, No. 9, 1916.
6. Fraser and Mitchell, quoted by W. Scholz: Kretinismus und Mongolismus, Ergebn. d. inn. Med. u. Kinderh. **3**: 540, 1909.
7. Neumann, H.: Ueber die Mongoloiden Typhus der Idioti-, Berlin, klin. Wchnschr. **30**: 210, 1899.
8. Swanberg, Harold, and Haynes, H. A.: A Case of Mongolism in One of Twins, Arch. of Neurol. & Psychiat. **2**: 717 (June) 1919.
9. Shuttleworth, G. E., quoted by Swanberg and Haynes: Brit. M. J. **2**: 661 (Sept. 11) 1909.

of more than one mongolian in the same family have been reported, the most recent being that of Pardee,[10] who suggests that endocrine disturbance is the probable etiologic factor. If there was an endocrine disturbance in the mother in the case described herein, which might manifest itself in a mongolian offspring, one would assume that the same cause would operate in disturbing the growth of the two twins. The interest of endocrinologists has been attracted to mongolism since Unger [11] reported his famous case, in 1912, in which myxedema and mongolism were present in the same infant.

17 East Seventy-First Street.

TRANSFUSION REACTIONS AND CITRATION WITHIN THE NEEDLE *

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TEMPLE, TEXAS

Transfusion reactions may be grouped as those occurring during administration and those occurring after the administration, but within a three hour period. The former group is composed, first, of those in which the heart is overloaded and dilates with the resultant coughing, dyspnea and rapid irregular pulse, any of which symptoms are indications for slowing or stopping the administration; and second by those receiving incompatible blood or the hemolytic reaction. These patients show sudden suffusion of the face, dyspnea, pain in the chest, back and limbs, cyanosis, rapid irregular pulse, and twitching of the muscles. These reactions occur usually before the first 75 c.c. of blood has been administered, and for this reason the injection of the first 100 c.c. should consume at least five minutes and, if any of the symptoms noted occur, the administration should be stopped. Only a few patients receiving a full dose of incompatible blood have lived through the ordeal. Bernheim [1] reports a patient saved by the immediate infusion of physiologic sodium chlorid solution. Those reactions occurring after the operation and within three hours are, in our opinion, as truly anaphylactic in nature as the hemolytic reactions, and are manifest by the temperature of from 100 to 105 F. lasting from several hours to several days, chills, nausea, vomiting, urticaria and malaise. It is my purpose here to consider the nonhemolytic reactions and a possible means of reducing their number and severity.

Satterlee and Hooker,[2] in discussing transfusion reactions with compatible blood, conclude that "importance is attached to the belief that many of the febrile and toxic reactions, not to be explained by hemolysis or agglutination, are due to the transfusion of blood which is undergoing incipient coagulative changes or which contains potential coagulative factors such as thromboplastin and thrombin." They reach this conclusion after discussing the physical influences; as whipping, stirring, agitation and contact with foreign material, as metal, rubber tubing, and glassware, to which blood is exposed during the ordinary transfusion with the resultant abrasion and disintegration of the platelets and setting free of thromboplastic elements.

Drinker and Brittingham,[3] after extensive practical experience and experimental studies, lay most emphasis on "changes in the platelets, a part of the process of coagulation" as a cause of transfusion reactions.

P. W. and M. C. Clough,[4] in a recent review, advance a similar explanation: "liberation of toxic substances probably from the platelets, in the incipient stages of blood coagulation."

In our own series of 100 transfusions the theory of incipient coagulative changes seems the most plausible explanation. In those instances in which difficulty was experienced in obtaining the blood from the donor, especially when the needle repeatedly clotted, the patient almost invariably experienced chills and a temperature of from 102 to 105 F. In several instances, threads from gauze inadvertently got into the receptacle, and clots were formed about them. These patients all had moderate reactions. On one occasion the flow of citrate was completely shut off until 200 c.c. of blood was drawn from the donor; then an excess 0.3 per cent. of citrate was allowed to flow in. The blood was perfectly fluid, and injection into the patient, who was almost exsanguinated from a bleeding ulcer, was begun. When about 250 c.c. of the 500 c.c. had been injected, the remainder clotted *en masse*. Within twenty minutes the patient was seized by a hard rigor, lasting one-half hour, with pulse of 155 and respiration of 32. This was by far the most severe reaction in our last forty cases, and was doubtless due to coagulative changes that were going on while the blood was still fluid enough to pass through a small needle.

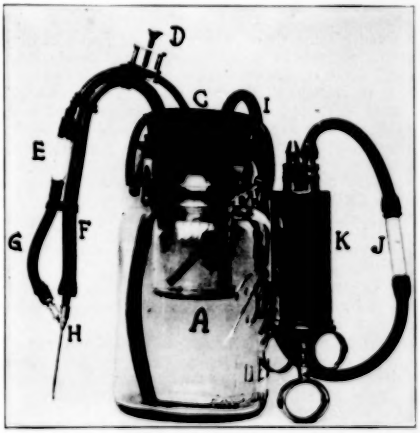

Fig. 1.—Apparatus ready for collection of blood.

Hemolysis due to the citrate seems to us worthy of little consideration in the light of our work with

10. Pardee, I. H.: Two Cases of Mongolian Idiocy in the Same Family, J. A. M. A. **74**: 94 (Jan. 10) 1920.
11. Unger, L.: Myxodem und Mongolismus eines Neugeborenen, Mitt. d. Gesellsch. f. inn. Med. u. Kinderh. **11**: 58-65, 1912.

* From the Temple Sanitarium Clinic.

1. Bernheim, B. M.: Blood Transfusions, Haemorrhage and the Anaemias, Philadelphia, J. B. Lippincott Company, 1917.
2. Satterlee, H. S., and Hooker, R. S.: Transfusion of Blood with Special Reference to the Use of Anticoagulants, J. A. M. A. **66**: 618-624 (Feb. 26) 1916.
3. Drinker, C. K., and Brittingham, H. H.: The Cause of the Reactions Following the Transfusion of Citrated Blood, Arch. Int. Med. **23**: 133-149 (Feb.) 1919.
4. Clough, P. W., and Clough, M. C.: A Study of the Reactions Following the Transfusion of Blood, South. M. J. **14**: 104-109 (Feb.) 1921.

citrated plasma in the treatment of influenzal pneumonia.[5] Blood was drawn and citrated to 0.25 per cent. from thirty-eight convalescents. This citrated blood was allowed to stand in the icebox from twenty-four to seventy-two hours; then the plasma was pipetted off. In not a single instance was the plasma tinged with hemoglobin. In 75 per cent. of the recipients there were distinct reactions manifested by chills and rise of temperature. In seven pneumonia patients receiving this

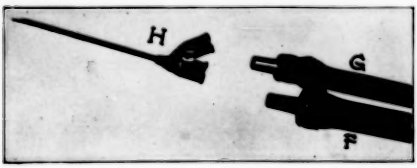

Fig. 2.—Special transfusion needle and connection.

citrated plasma there occurred a reaction which we have never seen in the 100 transfusions, namely, frank anaphylactic manifestations occurring within two hours of the injection. The symptoms were dyspnea occurring in seven, pulse rate above 130 in seven and going to 160 in two cases, and urticaria in five. In two cases there was marked edema of the face, and in one the eyes swelled shut and the skin was deeply cyanosed. Recovery was rapid in all after administration of atropin and epinephrin. Twelve times, shortage of convalescent plasma caused us to centrifuge the citrated blood immediately. This centrifuged citrated plasma was injected in eighteen instances without any noticeable reaction whatsoever. It seems plausible that the reactions from sedimented citrated plasma then were caused by the excessive contact with foreign material and resultant trauma to the platelets, particularly in the process of sedimenting and cooling for from twenty-four to seventy-two hours, pipetting off the plasma, and administering through an arsphenamin tube with the usual length of tubing.

De Kruif[6] has shown that blood is not toxic at the moment of withdrawal, but becomes so through changes incidental to clotting, and that the toxicity is increased by contact with alien substances. In 1915, Minot[7] demonstrated that blood drawn in a glass syringe and allowed to remain a short period before mixing with oxalate would usually clot when chloroform was added. Blood let through a paraffined cannula directly into oxalate did not clot on the addition of chloroform. He believes that the chloroform inhibits the action of the prothrombin, allowing the free thrombin formed in the first case to clot the fibrinogen. It follows that the contact with the glass syringe produced the thrombin.

No present day method of transfusion is free from the nonhemolytic type of reaction, and this is true because no method has been devised which entirely eliminates incipient coagulative changes taking place in the process of transfusion.

The majority of investigators at present concede that direct transfusion gives fewer reactions and a greater percentage of mild reactions than does the citrate transfusion. Lindeman[8] reported as low as 18 per cent. reactions of chills and rise of temperature of 2 degrees or more with the syringe cannula method, while McClure and Dunn[9] reported 13 per cent. severe reactions and 17 per cent. mild reactions with the same method. Reactions with the citrate method have been variously reported, as 17 per cent. by Sydenstricker, Mason and Rivers[10] in 100 cases, 60 per cent. by Drinker and Brittingham[8] in eighty-three cases, Pemberton 36 per cent. in 1,036 cases, 32 per cent. by P. W. and M. C. Clough[4] in 214 cases, and 64.8 by Meleney and his co-workers[11] in 196 cases. (It is significant that the lowest percentage of reactions in the latter group was obtained by Sydenstricker, Mason and Rivers and P. W. and M. C. Clough, who drew the blood under negative pressure in a closed container, thus avoiding clotting in the needle and stirring with a glass rod.)

What factors may cause alteration in transfused blood, and how may we eliminate them? These factors may be grouped under two headings:

1. Contact with foreign bodies.
   (*a*) Glassware, rubber tubing, needles, etc.
   (*b*) Sodium citrate in citrate method.
   (*c*) Length of time outside body.
2. Aeration.
   (*a*) Usual citrate method.

1. In the average apparatus for citrate transfusion, the blood is exposed to a great deal more foreign substance, glassware, tubing, etc., than in the direct meth-

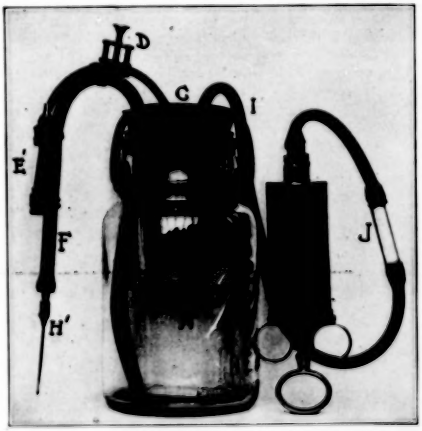

Fig. 3.—Apparatus ready for administration of blood.

ods, and much of this exposure comes before any anticoagulant is reached. Often in this process not only the incipient coagulative changes take place, but

5 O'Malley, J. J., and Hartman, F. W.: Treatment of Influenzal Pneumonia with Plasma of Convalescent Patients, J. A. M. A. **72**: 34-37 (Jan. 4) 1919.
6. De Kruif, P. H.: Toxicity of Normal Serum, J. Infect. Dis. **20**: 717-775 (June) 1917.
7. Minot, G. R.: Am. J. Physiol. **39**: 137, 1915.
8. Lindeman, Edward: Reactions Following Blood Transfusion by the Syringe Cannula System, J. A. M. A. **66**: 624-626 (Feb. 26) 1916.
9. McClure, R. D., and Dunn, G. R: Transfusion of Blood, Bull. Johns Hopkins Hosp. **28**: 99-113 (March) 1917.
10. Sydenstricker, V. P. W.; Mason, V. R., and Rivers, T. M.: Transfusion of Blood by the Citrate Method, J. A. M. A. **68**: 1677-1680 (June 9) 1917.
11. Meleney, H. E., et al.: Post-Transfusion Reactions, Am. J. M. Sc. **154**: 733-748 (Nov.) 1917.

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the actual clotting takes place in the needle and tubing. It is not unusual in the larger clinics to see cessation of flow from the donor necessitating needling the vein from one to five times. The mere presence of sodium citrate in amounts necessary, 0.25 per cent., does not seem to influence the reactions, as pointed out in the work on influenzal pneumonia mentioned above. Meleney and his co-workers have shown that the reactions have no relation to citrate dosage. In the direct methods, with the exception of the Kimpton-Brown tube, the passage of the blood requires from twenty to thirty seconds, while in the average citrate transfusion thirty minutes is considered excellent time. Thus there is much longer exposure to foreign body, and ample time elapses for loss of body heat.

2. Aeration in the usual citrate procedure may be said to be complete. The dropping of the small stream of blood from the needle into the citrate, with the stirring or agitation necessary to get a good mixture, occurs before the process of coagulation is arrested. Then the blood is poured into a second container for injection.

If these are the factors that may effect alterations in the transfused blood, the cause of our reactions lies here and must be eliminated as far as consistent with ease and success of the operation.

In 1918 I illustrated [12] a compact apparatus citrating the blood near the needle in the hope that it might be valuable in field work. This was a modification of an apparatus which we had used in sixty transfusions, with 38 per cent. reactions. Since this time important modifications have been made. The accompanying illustrations present a citrate apparatus which is at once compact, easy of operation, and reduces to a minimum any possibility of coagulation, both actual and incipient.

THE APPARATUS

A 1,000 c.c. graduated jar (Fig. 1 *A*) is used as a receptacle. A rubber stopper (*C*) is fitted to the neck of this jar. The neck of the graduated citrate bottle (*B*) pierces the stopper. From the jar (*A*) two tubes (*I* and *F*) are brought through the stopper. One (*I*) is the pressure tube, and is broken by the cotton filter (*J*). The other (*F*) is the blood tube, and reaches the bottom of the jar, ending outside with a metal (Luer) needle connection; *J* terminates in a mouth connection or, preferably, a two way pump (*K*). The citrate is brought from the bottom of the citrate bottle (*B*) through the citrate tube (*G*). This is broken by the dropper (*E*) and terminates in a (Luer) needle connection. *D* is a screw clamp with which the flow of citrate is controlled. *H* is a specially designed 16 gage needle with a double Luer shoulder.

THE OPERATION

The complete apparatus is wrapped and steam sterilized at 10 pounds pressure, the only precaution being that the tubes are not sharply bent and that the stopper is fitted very loosely to the neck of the jar. Sterilized, the stopper is fitted and clamped in. The citrate bottle (*B*) is filled to the 100 c.c. mark with 2.5 per cent. citrate, and negative pressure is exerted through the pressure tube (*I*), drawing the citrate along the citrate tube (*G*), through the dropper (*E*), through the special needle (*H*) and back into the jar (*A*) along the blood tube (*F*). Thus, the system is coated with citrate and 10 c.c. is drawn into the jar. The apparatus is now set on the arm board and the needle plunged through the previously sterilized skin into a large vein. Gentle negative pressure is exerted and a generous flow of citrate is allowed until the blood is seen to be coming in good volume; then it is regulated to about 40 drops to the minute, or so that with each hundred cubic centimeters in the jar (*A*) approximately 10 c.c. of citrate is withdrawn from the citrate bottle (*B*). The desired amount of blood being obtained, the pump is reversed. The needle (*H*) is removed and an ordinary needle (Fig. 3 *H'*) is fitted to the blood tube (*F*), the citrate tube being laid back out of the way. *H'* is now removed and inserted into the patient's vein. Positive pressure is exerted through the pressure tube (*I*); and, when the blood tube (*F*) is filled, the connection is made. The blood is driven over with gentle pressure and five minutes should be consumed in the administration of the first hundred cubic centimeters.

In the first sixty transfusions, citration was done near the needle, and the blood was injected by gravity through a length of rubber tubing (Table 1).

TABLE 1.—FIRST SERIES

Diseases Treated	Number	Reactions Number	Reactions Per Cent.
Pernicious anemia	46	20	43
Aplastic anemia	2	0	0
Secondary anemia	1	0	0
Hemophilia	3	1	33
Septicemia	2	1	50
Shock and hemorrhage	6	1	16
Total	60	23	
Percentage of reactions 38.3			

In the last forty cases in which the work was done with the apparatus as presented here, the percentage of reactions has fallen from 38.3 to 20 per cent. (Table 2).

TABLE 2.—SECOND SERIES

Diseases Treated	Number	Reactions Number	Reactions Per Cent.
Pernicious anemia	15	3	20
Secondary anemia	11	2	18
Purpura hemorrhagica	2	1	50
Pellagra	1	0	0
Myxedema	2	0	0
Septicemia	1	0	0
Shock and hemorrhage	8	2	25
Total	40	8	
Percentage of reactions 20			

This reduction in the number of reactions of almost 50 per cent. over the first series of cases may be ascribed wholly to: (1) perfect citration within the needle, preventing coagulative changes; (2) absence of stirring or aeration, since the blood comes always to the bottom of the jar and is injected from the same container without passing through any filters or other foreign materials; (3) rapidity of the transfer, which rarely requires more than twenty minutes and often not more than twelve or fifteen minutes.

In the first series all were done by one or the other of two operators, while in the last series there have been four different operators so that training of the operators cannot be considered. There is not only a great reduction in the number of reactions, but also a marked improvement in their character. In the last forty cases there have been only two moderate chills of thirty minutes, one mild urticaria lasting fifteen minutes, and in no case did the temperature rise above 102 F. Most of the reactions consisted of chilly sensations and slight elevations in temperature.

CONCLUSIONS

1. Nonhemolytic transfusion reactions are largely due to incipient coagulative changes in the transfused blood.

2. These changes are probably caused by injury to the platelets with the formation of thromboplastin and thrombin.

3. To prevent injury to the platelets we should avoid contact with foreign substances as far as possible,

12. Hartman, F. W.: New Methods for Blood Transfusion and Serum Therapy, J. A. M. A. 71: 1658-1659 (Nov. 16) 1918.

avoid aeration and loss of body heat, and add the anticoagulant as the blood leaves the vein of the donor.

4. The apparatus described is compact and easily manipulated; it citrates the blood within the needle.

5. The employment of this apparatus has reduced the number and severity of reactions 50 per cent.

THE PRESENT-DAY SOURCES OF COMMON SALT IN RELATION TO HEALTH

AND ESPECIALLY TO IODIN SCARCITY AND GOITER *

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It is not the purpose of this paper to discuss the iodin theory or the use of iodin in the prevention of goiter and its associated conditions. These have been investigated for animals by such workers as Marine and Lenhart,[1] Gaylord and Marsh,[2] and others,[3] and cover such animal life as fresh water fishes, frogs, and domestic animals (dog, cat, sheep and hog). The "hairless hog malady" and its association with goiter and deficiency of iodin in the diet was pointed out by Smith [4] in Montana and later by Hart and Steenbock [5] of the University of Wisconsin, and Kalkus of Washington State Agricultural Experiment Station. Marine advocated the giving of sodium iodid with salt in the prevention of endemic sheep struma in the St. Clair Flats about Detroit, with happy results. Finally, the goiter prevention work of Marine and Kimball [6] by administration of sodium iodid to schoolchildren of Akron, Cleveland and Warren, Ohio, is confirmatory of the importance of iodin in goitrous conditions. In foci of severe endemic goiter, sex plays little part.[7]

NATURAL SCARCITY OF IODIN

The fact that there should be a deficiency in natural iodin intake has been the subject of careful inquiry into the dietary of man and domestic animals by such investigators as Cameron,[8] Forbes and Beegle,[9] Bohn [10] and Winterstein.[11] Cameron succinctly summarizes the situation as follows: The iodin content of the environment determines the diet of plant life in the sea, and to this fact is due the marked difference in iodin found in fresh water plants and vegetables, on the one hand, and marine algae on the other; "all sea species of animals contain iodin;" and, "land plants contain very much less iodin, although it is widely distributed in them." Forbes and Beegle, after an exhaustive inquiry into the iodin content of foods of man and domestic animals, say, in answer to the usually assumed wide distribution of iodin: "The evidence seems much more to emphasize the rarity and the accidental nature of iodin as a food constituent."

Why there should be this natural deficiency of iodin in diets is curious, yet its scarcity in nature has been long known to geochemists, as well as its infrequency of occurrence in salt sources by commercial and industrial chemists. Sloan,[12] following Marine's suggestion for animals, advocates an iodized salt for the use of human beings, the proportion of sodium iodid to salt to be 1 to 5,000, and he observes that, in the evaporation of salt brines, the mother liquor which is removed takes with it the natural content of iodin which is originally "found in most of the salt brines from which salt is crystallized." Both Forbes and Beegle, and Bohn report the entire absence of iodin in various forms of market salt examined. Foulk, in 1906, found neither iodin or bromin in a finished product of Pomeroy (Ohio) salt, although the brine contained both.[13] Having made a number of industrial hygiene surveys in Ohio, including a survey of the salt industry, and having noted the by-products activity at some plants, I have taken occasion during the last summer to investigate the subject of the removal of iodin from the original salt sources, and I find a peculiar situation which I believe to be of considerable significance.

The preparation of valuable by-products has for years been a feature in the salt industry.[14] The by-products consist of calcium chlorid, bromin, calcium sulphate (gypsum), borates, magnesium chlorid, magnesium sulphate and, rarely, other substances, but never iodin or its compounds. To understand this situation, I have found it necessary to go into the geology and chemistry of salt formation, as well as to inquire into certain features in the manufacture of salt.

GEOCHEMISTRY OF SALTS [15]

Of the four halogens, iodin is by far the rarest in natural distribution, but it always occurs in sea water. "The sea is the great storehouse of iodin" (Abel and Halla).[16] Here certain plants, for example, the giant sea kelp, have the faculty of storing relatively large amounts of it. On their disintegration, the iodin is returned to the sea, thus an iodin cycle is established; but it includes the sea only. Sea plants, along with Chili saltpeter, are its chief commercial sources. It exists in sea water to the extent of 0.01 gm. of sodium iodid (NaI) per liter (Molinari),[17] and occurs in three forms, according to Gautier,[18] who, in the Gulf of Lyons, found: no inorganic iodin, except at great depths (880 meters [2,886 feet]—0.15 mg. per liter); 2.13 mg. per liter organic; and 0.1 mg. per liter in sea organisms. The suggestion is made that sea organisms transform the inorganic iodin compounds of the depths

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* From the Division of Industrial Hygiene, Ohio State Department of Health.

* A letter, preliminary to this paper, published in Science, Aug. 12, 1921, p. 131, speculated on both source and present-day purification of salt in relation to goiter. Credit should be given Dr. H. G. Sloan (Footnote 12) for previously mentioning the purification observation.

1. Marine, David, and Lenhart, C. H.: Further Observations on the Relation of Iodin to the Structure of the Thyroid Gland in the Sheep, Dog, Hog and Ox, Arch. Int. Med. **3**:66 (Feb.) 1909; Relation of Iodin to the Structure of Human Thyroids, ibid. **4**:440 (Nov.) 1909; J. Exper. M. **19**:70, 1914.
2. Gaylord and Marsh: Bull. U. S. Bureau Fisheries **32** (April 22) 1914, Doc. No. 790.
3. Grumme: Cor.-Bl. schweiz. Aerzte **46**:16, 1916. Emmet, Allen, Startevant: J. Biol. Chem. **41**:3, 1920. Kalkus, J. W.: Bull. 156, Wash. (State) Agr. Exper. Station, July, 1920.
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8. Cameron: J. Biol. Chem. **18**:335, 1914; **23**:1, 1915.
9. Forbes and Beegle: Bull. 299, Ohio Agr. Exper. Station, 1916.
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11. Winterstein: Ztschr. f. physiol. Chem. **104**:54, 1918.
12. Sloan: Ohio State M. J. **17**:172, 1921. Compare Bayard, Otto: Beitraege am Schilddruesenfrage (The Goiter Problem), abstr. Endocrinology **4**:606 (Oct.-Dec.) 1920.
13. Foulk's Analysis, reported by Bownacker, Bull. 8, Ohio Geol. Survey, 1906, p. 27.
14. Insley: U. S. Geol. Survey, Min. Res. of the U. S. **2**:239, 1921. Sweeney and Withrow: J. Indust. & Engin. Chem. **9**:671, 1917. Turrentine: Bull. 94, U. S. Bureau of Soils, Dept. Agr., 1913.
15. Clark: Bull. 616, U. S. Geol. Survey, 1916. Bownacker: Bull. 8, Series 4, Ohio Geol. Survey, 1906. Molinari: Industrial Chemistry (Inorganic), trans. by Feilman, 1912.
16. Cited by Cameron (Footnote 8).
17. Molinari (Footnote 15), pp. 170, 209, 424 and 452.

into the organic compounds found in the upper strata of sea waters. Bromin, likewise, exists to the extent of 0.064 gm. per liter in sea water.[17] It is also rare elsewhere in nature.

By far the chief natural iodin salt is sodium iodid. This is one of the most soluble salts known—about five times as soluble as sodium chlorid (158.7 gm. as compared to 35.7 gm. dissolved in 100 gm. of water at 0 C.).[18] While most of the other natural salts of iodin are also very readily dissolved, there are occasionally some which occur in minerals that are quite insoluble. The significance of this point will be speculated on later.

The specific gravity of ocean water is usually given as 1.028 (that of human blood is 1.060). Its salt content (salinity) is, on the average, 3.4404 per cent., being remarkably constant, the world over.[19] Obviously, it varies somewhat quantitatively in places, owing to fresh water admixtures along the coast, evaporation in pocketed bays of the sea, and formation of ice at the poles. The qualitative make-up is even more constant. Conventional combinations usually given for the salts of sea water, with their percentages, are:[20] sodium chlorid ($NaCl$), 77.8 per cent.; magnesium chlorid ($MgCl_2$), 10.9 per cent.; magnesium sulphate ($MgSO_4$), 4.7 per cent.; calcium sulphate ($CaSO_4$), 3.6 per cent.; potassium sulphate (K_2SO_4), 2.5 per cent.; magnesium bromid ($MgBr_2$), 0.2 per cent., and calcium carbonate ($CaCO_3$), 0.3 per cent.; total 100.0 per cent.

There are also constantly present traces of many other elements and combinations, including iodin. Blackmore[21] estimated the value of iodin at $62,003,200 per cubic mile (4.696 cubic kilometers) of sea water (1912), and the gold at $92,184,000.

The great solubility of sea salts is noteworthy, for it is found that, after evaporating sea water, the deposit remaining dissolves in pure water with a total insoluble residue of from only 0.007 to 0.010 per cent.[22] This is significant as showing the easy assimilability of sea salines by animal and plant organisms so far as solubility goes. It is stated also by geochemists that there probably has been no significant variation in the constancy of these sea salines within the epoch of mammals and, perhaps, of total animal and vegetable life on the earth. The slight changes due to salts received from river waters are insignificant. Furthermore, most of the sea salines have probably been the result of rock decomposition in the sea floor and coasts during countless ages, so that an equilibrium has long since been established, which is practically the same for the sea mass as a whole, the world over.

The difference in solubility between sodium chlorid and sodium iodid undoubtedly explains why there is plenty of the former in the earth's deposits and very little of the latter. In the first place, in the drying up of seas in ages past, sodium chlorid was the first substance deposited, and often the supernatant liquid escaped with its sodium iodid still in solution. A salt stratum or "rock salt" bed resulted, which was free of iodin. In the second place, such sodium iodid as may have been deposited has been very largely dissolved out for ages through the agency of percolating rain and subsoil waters. Finally, in the third place, pent-up sea brines or supernatant salt solutions, of both surface and subterranean types, have been subjected so long to similar land-water perfusions as to lose practically all of their more soluble constituents. Thus, higher surface altitudes are freest from iodin, while mineral springs which represent drainings from higher altitudes show it, as among the last places of its occurrence.[23]

This is the explanation given for the absence of iodids and other soluble salts in the great natural salt deposits of the Alps, at Stassfurt, and elsewhere throughout the world,[17] while it accounts for the richness in iodin of some of the world's most famous springs.

The practical significance of this can be stated in one short sentence: The land surface and, indeed, salt (sodium chlorid) deposits and inland salt brines cannot be depended on for iodin; that which was once present has been virtually leached out and all washed into the sea, or, at least, into lower lying plains or deeper earthy strata. Naturally, this condition is progressive. It accounts for the tendency in wild animals to favor certain salt springs or "licks," and to quit them for others without apparent cause. Kalkus reports that "deer lick" soils showed an iodin content of 0.032 per cent., whereas soils from a goitrous district showed only 0.0015 and 0.00161 per cent. Civilization augments the depletion process, for, as long pointed out by soil economists, plants remove salts from the soil for the use of animals whose wastes we cause to be deposited in "pockets" or in drainage systems which lead to the sea, and not back to the soil.

The fact that, occasionally, some goitrous region has become free of the tendency to produce goiter, may be explained on the theory that some iodin salt becomes available which has hitherto been buried beyond the dissolving effects of the water present, or that a change in the type of water, from hard to soft, has taken place. There are also a number of difficultly soluble iodin compounds and minerals. These points would appear to explain on a chemical basis why "goiter wells" sometimes become innocuous when the water is boiled, or when new water supplies are obtained or soft water is substituted for the hard waters of "shell-lime" districts.

INFREQUENCY OF GOITER IN MARITIME DISTRICTS

The relative infrequency of goiter along sea coasts and its mild type[24] when present is mentioned in most textbooks. It is especially brought out in "Defects Found in Drafted Men,"[25] in which the ratio stands as 1.02 to 17.55 when seacoast dwellers are compared to dwellers in mountain regions. The cause appears to be associated in some way with the iodin factor.

Thus, Hunter and Simpson[26] found the amount of iodin in the thyroids of sheep pastured at the seacoast to be twice that of those pastured inland. McCarri-

18. Whalen: Bull. 146, U. S. Bureau of Mines, Min. Tech. 20, p. 137, 1917. Van Nostrand's Chem. An., 1918.
19. Clarke: Data of Geochemistry, Bull. 616, U. S. Geol. Survey, 1916.
20. Whalen: Bull. 669, U. S. Geol. Survey, pp. 197, 219, 1919.
21. Blackmore: Chem. Abstr. 6: 2055, 1912.
22. Whalen: Bull. 669, U. S. Geol. Survey, p. 219, 1919.
23. Even here, Skinner and Stiles (Bull. 139, U. S. Bureau of Mines, 1911) failed to find iodin in any of the fifty-odd mineral waters examined from widely scattered sources in the New England states. But it is found in good percentage in some springs, wells and surface waters, elsewhere in the country (Haywood: Bull. 91, U. S. Bureau of Mines, 1905; Orton: Rock Waters of Ohio, Nineteenth Annual Rep., U. S. Geol. Survey, p. 633, 1898; Clarke (Footnote 19)) and in concentration often greatly exceeding its content in sea water. On the other hand, salt pools or salt springs which represent supernatant solutions over salt beds are usually free of iodin or practically so.
24. Grumme (Footnote 3); Knappenberg: Chem. Abstr. 14: 1381, 1920.
25. U. S. War Dept., 1920, p. 323.
26. Hunter and Simpson, cited by McCarrison: The Thyroid Gland, 1918, p. 41.

son [26] gives the average weight of adult thyroids as from 35 to 50 gm. inland and from 20 to 30 gm. at the seacoast. The iodin theory would appear to explain these seacoast phenomena in several ways: (1) Because sea air contains iodin. It is found in the air residue collected for analysis, which consists of various organisms.[27] (2) All sea animals, sea plants and, therefore, sea foods contain iodin, and such foods are naturally more ingested by residents along the seacoast than those inland.[28] (3) Up to the last half century or so, most of the dietary salt used by goiter-free peoples has been derived from sea water, or from iodin-containing salt springs (wild animals sought salt "licks") and used more or less in crude form, or at least without great attention to purification, so that traces of iodin compounds have remained within it, whereas today practically all the salt purchasable is derived from deep-lying inland deposits or brines, which are naturally, or by manufacture, iodin free.

Gaylord and Marsh [2] found that the waters used to supply fish hatcheries throughout the country were iodin and bromin free,[29] and that land-locked salmon and those in hatcheries developed endemic goiter, and thyroid carcinoma, readily; but that "no marine species have been found in the sea with thyroid enlargements"; "an immunity resides in these marine species," they enjoy "a protection which the sea affords"; and, from their investigations, "it is evident that marine species may develop thyroid carcinoma while resident in fresh waters." Unfortunately, published information on the diseases of marine animals in general, at least covering the afflictions of the thyroid, is very scarce.[30]

SOURCES AND PREPARATION OF COMMON SALT (SODIUM CHLORID)

The commercial procuring of salt in the United States represents all the known sources and methods of preparation, as may be noted in the accompanying table, prepared from various government reports,[31] except for the last two columns, which were supplied by Professor Withrow of Ohio State University.

According to the U. S. Geological Survey Report [32] for 1919, there were 102 plants in fifteen states and territories engaged in the salt industry in 1919. Of these plants, all are inland, with the exception of those along the California coast, where sea water is the source of supply. The inland industry has a great advantage because of the much greater sodium chlorid content of rock salt beds and natural brines. The total production was 6,882,902 short tons. Michigan led with 2,492,378 tons; New York followed with 1,947,829; Ohio was third with 991,730, the other states following in descending order: Kansas, California, Louisiana, Virginia. The per capita consumption was 116 pounds (256 kg.) per year. Imports equaled 0.9 per cent. of the total, coming chiefly from Spain and the British West Indies. The inland salt sources are usually found to be devoid of iodin (and usually of bromin). As a general rule, rock salt deposits and, therefore, the artificial brines made from them, contain a minimum of iodin if any (eastern Michigan, northern Ohio, New York State, Kansas and Louisiana). Natural brines are more likely to contain iodin and especially bromin (southeastern Ohio at Pomeroy, West Virginia, Pennsylvania, western Michigan). Yet the Pomeroy brines contain but 0.004 gm. per liter of iodin [33] or less than one-half that of sea water.[33] Salt lakes (Great Salt Lake and the Dead Sea) contain no iodin.[34]

THE COMMERCIAL PROCURING OF SALT IN THE UNITED STATES

Source and Method	Chief Localities	Amount, 1919 (Short Tons)	Per Cent.	Chief Use
Rock salt, mined	N. Y., Kan., Mich., La., Calif., N. M., Utah	1,642,057	23	Stock feed
Salt in brine (pumped from natural and artificial brines*)	N. Y., Mich., Ohio, Utah, etc.	2,850,639	41	Chemicals
Salt evaporated from natural and artificial brines*	Mich., N. Y., Kan., Ohio, Calif.	2,390,206	22	Packers
			10	Table and dairy use
(a) Direct heating methods; steam, or vacuum pans; pumped from salt wells (extensive)			4	Miscellaneous (solar)
			100	
(b) Solar evaporation (limited). Sea water (California). Salt lakes (Utah). Salt springs and wells (Syracuse, New York, 1789-1880)				

* Artificial brines are made by forcing water down into rock salt deposits in the earth, often from 2,500 to 3,000 feet (760 to 912 meters) deep, and pumping up or air-lifting the resulting brine. Natural brines are supernatant solutions over salt beds. Salt from sea brine is made only in California, which produces 4 per cent. of the country's total annual output of salt.

The first step in the preparation of salt is the evaporation of the brine from which sodium chlorid precipitates and then crystallizes. The mother liquor is subjected to further similar treatments (sulphates and carbonates of calcium, if present, precede the sodium chlorid in crystallizing out) until the profitably recoverable salt is all obtained. The finished product averages 96 per cent. sodium chlorid ($NaCl$), 3 per cent. moisture, and the balance principally magnesium chlorid ($MgCl_2$). The remaining liquor or "bittern" is led away, usually to be discarded, but occasionally for the purpose of obtaining its by-products, as listed above.

When we come to investigate the preparation of salt from the sea water, which is now made on a commer-

27. Gautier, cited by Cameron (Footnote 8). Luckhardt, Koch, Schroeder and Weiland: J. Pharmacol. 15:1, 1920.

28. Grunme (Footnote 3). Rosenau: Preventive Medicine and Hygiene, p. 918.

29. Large quantities used for analysis showed less than one part per billion of iodin and one part per one-fourth million of bromin.

30. A prominent authority on fishes, Prof. R. C. Osborn of the Ohio State University, gives me this information and states further that the same information would be difficult to ascertain for marine forms in their wild state because, in their competitive life, those which become slightly diseased or incapacitated are quickly made away with by their carnivorous enemies. However, replies received from several marine biologists (Franz Schrader, M. C. Marsh, Prof. G. H. Parker and C. H. Walters), some having experience with the seals of the Pribilofs, stress the absence of thyroid enlargements in sea animals, so far as their observations have gone.

31. Compare Footnotes 14, 18 and 20.

32. Whalen: Bull. 146, U. S. Bureau of Mines, Min. Tech. 20, 1917. Mason: Mining Sc. Press 118:528. Turrentine: Bull. 94, U. S. Bureau of Soils, 1913. Whalen: Bull. 669, U. S. Geol. Survey, 1919.

33. They likewise contain soluble barium, a metal not reported in sea salines which, because of its poisonous properties for animals, must be carefully separated from dietary salt.

34. Frezenius (Chem. Abstr. 7:3522, 1913) declares that a trace of iodids occurs in the waters of the Dead Sea.

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cial scale only in California, we find that the same process of evaporation frees it from the bittern which carries away with it all of the iodin and various other elements, ingredients and compounds naturally contained in sea water. Hence, it would appear (1) that land animals, including man, have no dependable source of iodin in the salt derived from inland sources, which produce about 96 per cent. of our total salt supply, and (2), irrespective of whether it is derived from inland sources or from sea water, salt is not at present a source of iodin, because, as Sloan points out, of the preparation processes through which it passes.

SUGGESTED CHANGES IN DIETARY SALT

This brings us to but one logical conclusion: If land animals, including man, must have iodin as a necessary content of their food intake, its one reliable natural source is sea water, which, however, must be handled and provided in a manner to retain the iodin, and this probably in its organic form.

This raises an important question: Should not total sea salts or, indeed, plain sea water, be used as the proper and complete condiment for man and land animals? It must be remembered that it contains not only the two discussed essentials, sodium chlorid (NaCl) and sodium iodid (NaI), but also many other physiologically important salts and salines. It is not poisonous. It can be filtered free of foreign matter, even bacteria. Plants and animals, both sea and land forms, show a selective action for such elements as they need for their economic processes.

There is a dearth of information in textbooks and reference works concerning the direct ingestion of sea water as a feature of thalassotherapy,[35] but its subcutaneous injection in hypodermoclysis is said to far excel physiologic sodium chlorid solution for the same conditions and indications for which the latter is used. The sea water salts, though they exist, with the exception of sodium chlorid and magnesium chlorid, in relatively small amounts, are found to be the identical salts and salines found in fluids of the animal body. While it is true that most of the sea water elements are also widely distributed in the balance of nature and found in our usual foods, the great solubility of the combinations in which they exist in sea water would appear to warrant giving them, in toto, serious consideration in the dietary of man and domestic animals.[36]

In addition to the reported inhibiting influence of sea water on goiter, may not some of the rarer elements present, if not iodin itself, play an important part in the prevention of some other human afflictions of little understood etiology? May not the absence of bromin from our usual food intake play an important [37] part in the occurrence of various excitomotor conditions?

It is sufficient to say that while the character of dietary salt is apparently all important to man and domestic animals, it is hardly a major phase of the salt "manufacturing" industry, as vast quantities of salt are used for other purposes—curing meats, refrigeration, soda manufacture, and chemicals, as shown in the table.

SUMMARY

1. The question of the significance of iodin in the prevention of goiter is left to the authorities that have been cited.

2. The question of the observed scarcity of iodin in food for man and animals is, also, left to the authorities cited.

3. While iodin may occur in natural deposits along with chlorin, usually in the form of the sodium salt, it is never obtained from such sources commercially because it occurs in too limited quantities. Chili saltpeter is the chief source of iodin.

4. The sea is the great storehouse of iodin where it completes a cycle from inorganic compounds to organic life and return.

5. The salts of sea water are constant in both quality and quantity. Sodium chlorid comprises 77.8 per cent., magnesium chlorid 10.9 per cent., with many compounds, including sodium iodid, which composes the remaining 11.3 per cent. It has an average total salinity of 3.4404 per cent. All of the salts in sea water are unusually soluble in plain water.

6. The great solubility of sodium iodid accounts for its almost complete absence from the land surface and, perhaps, for some of the peculiarities noted in regard to the incidence of goiter.

7. Authorities are agreed that goiter is infrequent in both animals and man along the sea. The same is true, also, of some fishes (salmons) which inhabit both fresh water and sea water, tending to develop goiters in the former, and none in the latter.[2] Apparently sea animals do not have goiter.

8. Practically all salt used in the United States for dietary consumption is obtained from inland sources by the evaporation of brines, which for the most part are inherently free of iodin.

9. Irrespective of the source, whether sea water or inland deposits, the modern processes of preparing and purifying salt free it from all traces of iodin, as well as its other naturally associated elements, many of which are identical with the body fluids of higher animals.

CONCLUSION

An analogy should be drawn from sea life and a precept taken from evolution. Of the dependable sources of iodin in nature—sea air, sea food and sea water—it is to sea water, used perhaps in place of common salt as a condiment, that inland dwellers should look. This substitution would appear to offer a complete solution to the iodin deficiency problem, if nothing else, while evidence would tend to show that other constituents of sea water have also an undoubted place in the economy of the higher animal organism, perhaps to the extent of precluding some diseases which are likewise, possibly, of a deficiency type. Common salt for dietary purposes should include not only sodium chlorid but also sodium iodid, and undoubtedly many of its other original concomitants. For geochemical reasons, great care should be taken in selecting its source, if it is not actually derived always from sea water. It must then be handled commercially in a manner to retain these constituents.

35. Cohen, S. Solis: Reference Handbook of the Medical Sciences, Ed. 3, Stedman **8**: 155, 1917.

36. From the nature of sea salines, some of which are very deliquescent, it is to be observed that a change in the form of dispensing such a condiment, from a dry to a liquid form, would probably be necessary. The rather bitter taste might prove objectionable to some who dislike "bitters." No doubt the chief "bitters" in sea water (the sulphates of magnesium, calcium, sodium and potassium which are less soluble than sodium chlorid [NaCl], and the magnesium chlorid [$MgCl_2$]) might be reduced in amount or separated out of the prepared condiment. It is to be remembered, however, that it is a condiment and not a drink which is under discussion.

37. Pellegrini: Inhalations of bromine produce marked physiological alterations in the thyroid, Arch. di farmacol. sper. **23**: 201, 1917; Chem. Abstr. **11**: 2232, 1917. Carnot and Coirre: Neurotropic and Elective Action of Bromine on Brain Tissue, Compt. rend. Soc. de biol. **76**: 641, 1914. Is Bromin a Tissue Component? editorial, J. A. M. A. **77**: 470 (Aug. 6) 1921.

SIMPLIFICATION OF WOODYATT METHOD FOR CALCULATING THE OPTIMAL DIABETIC DIET *

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The results of the research work of Allen and his associates mark an epochal advance in the treatment of diabetes. The great majority of cases of diabetes can be successfully treated by his method. There remain, however, a few severe cases in which the prevention of glycosuria by the restriction of diet results in severe inanition. In such cases the physician has the choice of furnishing a sufficient supply of food to maintain the energy requirements of the body and disregarding the glycosuria, or of restricting the diet and permitting the gradual loss of body tissues to continue.

Neither procedure is satisfactory. Confronted with the necessity of solving this difficulty, Newburgh and Marsh [1] had the courage to prescribe a diet with a low protein fraction and an amount of fat which had previously been considered dangerous. They report seventy-three cases in which this method was used with astonishing success. Not only were the urines of these patients rendered sugar and acetone free, but a moderate output of energy with an increase in weight was rendered possible.

Of glucose, protein and fat, the first is the only one which can be considered an indispensable element in the production of animal heat and muscular energy. If adequate amounts are not furnished in the diet, the proteins and fats of the body are converted to make up the deficiency. In the case of protein this is not an economical use of material, since it must inevitably result in a serious loss of the nitrogenous constituents of the body. Glucose may heat and run the human engine, but protein is the substance of which the engine is made. Any diet, therefore, which fails to provide for replacement of nitrogen must in the long run result disastrously.

TABLE 1.—FATTY ACID EQUIVALENT AT A KNOWN GLUCOSE TOLERANCE *

Known Glucose Tolerance	Corresponding Fatty Acid Tolerance	Known Glucose Tolerance	Corresponding Fatty Acid Tolerance
50	75	180	270
60	90	190	285
70	105	200	300
80	120	210	315
90	135	220	330
100	150	230	345
110	165	240	360
120	180	250	375
130	195	260	390
140	210	270	405
150	225	280	420
160	240	290	435
170	255	300	450

* To be used to determine the tolerance for higher fatty acids and ketogenic amino-acids corresponding to a known glucose tolerance. The fatty acid tolerance is figured at 1.5 times the glucose tolerance.

The exact nitrogen requirements of an individual patient can be determined only by an analysis of the food intake and the waste output. The patient is in nitrogen balance when the food supplies at least enough nitrogen to make good the losses due to wear and tear on the protein tissues. The amount can be approximated closely enough for clinical purposes by a relationship between the gross body weight and the protein intake. Newburgh and Marsh found that 0.66 gm. of protein per kilogram of body weight was sufficient to maintain nitrogen balance in some of their cases. This must, however, be regarded as an absolute minimum, since in the experience of others 1 gm. or more per kilogram will more nearly meet the requirements.

TABLE 2.—DETERMINATION OF PROTEIN FRACTION OF DIET *

Weight in Pounds	Metric Equivalent in Kilograms	1.5 Grams per Kg.	2 Grams per Kg.	2.5 Grams per Kg.
55	25	37.5	50.0	62.5
66	30	45.0	60.0	75.0
77	35	52.5	70.0	87.5
88	40	60.0	80.0	100.0
99	45	67.5	90.0	112.5
110	50	75.0	100.0	125.0
121	55	82.5	110.0	137.5
132	60	90.0	120.0	150.0
143	65	97.5	130.0	162.5
154	70	105.0	140.0	175.0
165	75	112.5	150.0	187.5
176	80	120.0	160.0	200.0
187	85	127.5	170.0	212.5
198	90	135.0	180.0	225.0
209	95	142.5	190.0	237.5
220	100	150.0	200.0	250.0

* For use in determining the amount of protein necessary to maintain nitrogen equilibrium at 1, 1.5, 2 and 2.5 gm. per kilogram of body weight. The minimum is 1 gm.

It is not necessary to figure the weight too closely, since this method can furnish only an approximate idea of the amount of protein required. In adults, a difference of 5 pounds above or below the exact weight does not appear to me to be important, since the water, fat, mineral and salt content of two individuals of exactly the same weight may vary considerably. The amount of protein necessary to maintain nitrogen equilibrium in the two cases would, therefore, differ. For these reasons, too great refinement in determining the protein fraction of a diet by its relation to the gross body weight is not warranted except in cases in which inanition is extreme.

Fat as food cannot be considered as indispensable to the human body, since as a source of energy it can perform few functions which glucose cannot perform as well or better and with less tax on the metabolic processes. Body fat, however, constitutes an important reserve source of energy, and is important as a supporting tissue and in the structural make-up of nerves and other tissues. Food fat cannot be utilized adequately as a source of energy except when its oxidation is accompanied by the oxidation of glucose. In other words, "fat burns in the flame of glucose." Faulty oxidation results in ketonuria.

The normal individual and the diabetic differ only in that the latter is unable to utilize as large an amount of glucose. By reason of this fact the diabetic shows ketonuria when his sugar tolerance falls below a point which does not permit complete oxidation of the fatty ketogenic acids. The problem of determining the optimal diabetic diet, therefore, resolves itself into one which permits (1) enough protein to maintain nitrogen equilibrium, (2) as much glucose as the functional insufficiency of the pancreas will permit, and (3) as large an amount of fat as can be oxidized without the appearance of ketone bodies in the urine, or other signs of acidosis.

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1. Newburgh, L. H., and Marsh, P. L.: Use of a High Fat Diet in Treatment of Diabetes Mellitus, Arch. Int. Med. 26:647 (Dec.) 1920.

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In a recent article, Woodyatt [2] calls attention, among other things, to the necessity of considering endogenous conversion of protein and fat into glucose and ketogenic acid bodies in adjusting the diabetic diet. On the basis of experiments by Zeller, Lusk, Shaffer and Osborne, and on clinical and chemical observations of his own, he advances the hypothesis that the ratio of higher fatty acids to glucose in the diabetic diet should be as 1.5 is to 1 if acidosis is to be avoided. The practical application of this hypothesis would mean that a diabetic obtaining and utilizing 100 gm. of glucose from all sources should be able to oxidize completely 150 gm. of higher fatty acids, an amount obtainable from 170 gm. of fat. The diets used by Newburgh and Marsh contain two or more parts of ketogenic acids to one of glucose. Further experience with high fat diets may show that under certain conditions still larger amounts of ketogenic acids may be oxidized. At present Woodyatt's calculations seem to be a conservative appraisal of the metabolic processes involved in the oxidation of ketogenic acids. He has attempted the practical application of generally accepted facts in regard to endogenous metabolism to the problem of figuring the optimal diabetic diet. It is unfortunate that the application of his hypothesis as originally presented requires

TABLE 3.—YIELD OF KETOGENIC ACID *

Yield of Ketogenic Acid from Protein	Grams of Substance	Yield of Higher Fatty Acids from Fat
2.3	5	4.5
4.6	10	9.0
6.9	15	13.5
9.2	20	18.0
11.5	25	22.5
13.8	30	27.0
16.1	35	31.5
18.4	40	36.0
20.7	45	40.5
23.0	50	45.0
25.3	55	49.5
27.6	60	54.0
29.9	65	58.5
32.2	70	63.0
34.5	75	67.5
36.8	80	72.0
39.1	85	76.5
41.4	90	81.0
43.7	95	85.5
46.0	100	90.0
48.3	105	94.5
50.6	110	99.0
52.9	115	103.5
55.2	120	108.0
57.5	125	112.5
59.8	130	117.0
62.1	135	121.5
64.4	140	126.0
66.7	145	130.5
69.0	150	135.0
71.3	155	139.5
73.6	160	144.0
75.9	165	148.5
78.2	170	153.0
80.5	175	157.5
82.8	180	162.0
85.1	185	166.5
87.4	190	171.0
89.7	195	175.5
92.0	200	180.0

* For use in determining the average yield of ketogenic acids of protein (left column) figured at 0.46 and of fat (right column) figured at 0.9.

the use of complicated equations. Simplification of calculation so that all the necessary information can be obtained by simple addition and subtraction is desirable. I have attempted to simplify the method of calculation by the preparation of tables which may be used as such, or which may be adapted to the slide rule.

2. Woodyatt, R. T.: Objects and Method of Diet Adjustment in Diabetes, Arch. Int. Med. 28:125 (Aug.) 1921.

To use the tables it is necessary to know (*a*) the weight of the patient and (*b*) the number of grams of glucose obtained from all sources which can be utilized. The method of calculation can best be illustrated by applying it in a hypothetic case in which the weight is 60 kg. and the glucose tolerance is 120 gm.

TABLE 4.—DETERMINATION OF CARBOHYDRATE FRACTION *

Yield of Glucose from Protein	Grams of Substance	Yield of Glycerol from Fat
2.9	5	0.5
5.8	10	1.0
8.7	15	1.5
11.6	20	2.0
14.5	25	2.5
17.4	30	3.0
20.3	35	3.5
23.2	40	4.0
26.1	45	4.5
29.0	50	5.0
31.9	55	5.5
34.8	60	6.0
37.7	65	6.5
40.6	70	7.0
43.5	75	7.5
46.4	80	8.0
49.3	85	8.5
52.2	90	9.0
55.1	95	9.5
58.0	100	10.0
60.9	105	10.5
63.8	110	11.0
66.7	115	11.5
69.6	120	12.0
72.5	125	12.5
75.4	130	13.0
78.3	135	13.5
81.2	140	14.0
84.1	145	14.5
87.0	150	15.0
89.9	155	15.5
92.8	160	16.0
95.7	165	16.5
98.6	170	17.0
101.5	175	17.5
104.4	180	18.0
107.3	185	18.5
110.2	190	19.0
113.1	195	19.5
116.0	200	20.0

* For use in determining the average glucose yield of protein figured at 0.58, and the glycerol yield of fat figured at 0.1.

(Total glucose tolerance is roughly the amount of glucose in the carbohydrate foods, plus 58 per cent. of the protein and 10 per cent. of the fat, minus the amount of glucose eliminated in the urine.) By referring to Table 1 it is found that a glucose tolerance of 120 gm. has a fatty acid equivalent of 180 gm. By referring to Table 2 the protein fraction of the diet can be determined on the basis of one or more grams per kilogram. If we wish to keep the protein fraction of the diet as low as possible consistent with nitrogen balance, we may prescribe 1 gm. per kilogram, which in this case would be 60. Referring to Table 3, we find that the left hand column gives the ketogenic acid yield of 60 gm. of protein as 27.6 gm. Deducting this amount from the total fatty acid tolerance of 180 gm., there is left a balance of 153 gm. which, by referring to the right hand column, is found to represent the amount of fatty acids in 170 gm. of food fat. Now, to determine the carbohydrate fraction, referring to Table 4, we find that 60 gm. of protein may yield 34.8 gm. of glucose, and that 170 gm. of food fat may yield 17 gm. of glucose from the glycerol contained in the fat. The total glucose obtained from these two sources is, therefore, 51.8 gm. The tolerance for glucose is 120 gm. Deducting 51.8 from 120, there is left a deficit of 68 gm., which must be supplied by carbohydrate foods. The diet would therefore consist of protein, 60 gm.; fat, 170 gm.; glucose, 68 gm., yielding 2,042 calories.

25 East Washington Street.

PREOPERATIVE TREATMENT FOR POSTOPERATIVE COMFORT

REPORT OF SYNERGISTIC ANESTHESIA

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It is our belief that a large amount of postoperative discomfort results from acidosis and traumatic shock. The operator is chiefly responsible for the latter, and with judicious care should be able to minimize this factor. Acidosis in various degrees is present in most postoperative cases.

Following all ether anesthesias, acetone bodies are found in the urine, while there is a decrease in the carbon dioxid combining power of the blood plasma showing a decreased alkali reserve and an early stage of acidosis.[1] Short,[2] reporting on a series of patients whose urine and blood were examined before and after operation, states that the acetone bodies increase and that the plasma bicarbonate decreases. Caldwell and Cleveland,[3] in a series of 100 cases, found acetone present in 23 per cent. and diacetic acid present in 13 per cent. before operation, while after operation the percentage was 72 per cent. and 50 per cent., respectively. Ross [4] gives 50 and 35 per cent. after operation. Austin and Jonas [5] determined the carbon dioxid combining capacity after ether anesthesia, and found a maximal decrease of 10 per cent. by volume, the lowest amount observed being 47 per cent. by volume. Cannon,[6] Morris [7] and Henderson [8] agree that there is a definite decrease in the alkali reserve.

Five years ago we followed closely the urinary findings in a series of laparotomies, and found acetone in

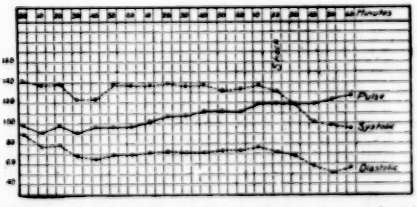

Chart 1.—Record of pulse and blood pressure in Case 1. Partial gastrectomy and postgastro-enterostomy, giving early indication of shock.

60 per cent. of the cases and diacetic acid in 25 per cent. for the first twenty-four hours after operation. A routine was inaugurated so that every patient when possible received sodium bicarbonate, 15 grains (1 gm.), and lactose, 5 grains (0.3 gm.), every four hours for six or eight doses before operation.

1. Reimann, S. P., and Bloom, G. H.: J. Biol. Chem. **36**: 211 (Oct.) 1918.
2. Short, J. J.: J. Biol. Chem. **41**: 503 (April) 1920.
3. Caldwell, G. A., and Cleveland, M.: Surg., Gynec. & Obst. **25**: 22 (July) 1917.
4. Ross, E. M.: Canad. M. A. J. **10**: 548 (June) 1920.
5. Austin, J. H., and Jonas, A. F.: Am. J. M. Sc. **153**: 81 (Jan.) 1917.
6. Cannon, W. B.: Acidosis in Cases of Shock, Hemorrhage and Gas Infection, J. A. M. A. **70**: 531 (Feb. 25) 1918.
7. Morris, W. H.: The Prophylaxis of Anesthesia Acidosis, J. A. M. A. **68**: 1391 (May 12) 1917.
8. Henderson, Yandell: J. Biol. Chem. **33**: 345 (Feb.) 1918.

The urine in these cases was alkaline, and the amount of acetone bodies was reduced but not entirely eliminated. The general condition of the patient was improved, nausea being less and not one of the series showing severe acidosis. We were unable to check the carbon dioxid, but Morris [7] has reported a series of ten patients who received 150 grains (9.75 gm.) of sodium bicarbonate before operation, and a similar number who did not have any preliminary treatment and found the decrease of carbon dioxid combining capacity of the blood to compare 5.7 to 9 per cent. by volume.

Gwathmey [9] reported the use of synergists with colonic and nitrous oxid anesthetics. Instead of using

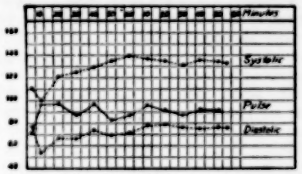

Chart 2.—Record of pulse and blood pressure in appendectomy Case 6, showing no marked variation or deleterious effect from the use of magnesium sulphate.

magnesium sulphate alone as Meltzer did, he combined pure Epsom salt with morphin and found that smaller doses were required to relieve pain, less anesthesia used and the postoperative condition in a large measure free of distress.

We have tried this synergistic method of Gwathmey together with preliminary alkaline treatment in a series of cases, using ether as the general anesthetic. The results have been so gratifying that we feel justified in reporting in detail.

Our technic consists of a preliminary alkaline treatment of sodium bicarbonate and lactose for several days before operation in order to have the patient thoroughly saturated with the carbonate. Immediate preoperative treatment is essentially that of Gwathmey,[10] which consists of a hypodermoclysis of a 4 per cent. chemically pure and sterile solution of magnesium sulphate, 200 c.c. given one and one-half hours before operation, and morphin sulphate, from 1/10 to 1/8 grain in 1.5 c.c. of a 25 per cent. chemically pure and sterile solution of the magnesium sulphate given at fifteen minute intervals for two or three doses, starting one and a quarter hours before operation. Gwathmey [11] has used as much as 400 c.c. in hypodermoclysis and given the morphin in from 1 to 2 c.c. solution. We used only 200 c.c. hypodermoclysis and 1.5 c.c. in the hypodermic. The patient is then kept in a darkened, quiet place, and very gently removed to the anesthetizing room, where the general anesthetic of ether by the drop method is commenced. The patient is practically in a state of analgesia and the excitement stage is nil. The pulse usually is slow at first, rising somewhat in the second stage, but returning to a lower rate during the operation.

9. Gwathmey, J. T.: Synergistic Colonic Anesthesia, J. A. M. A. **76**: 222 (Jan. 22) 1921.
10. Gwathmey, J. T.: Current Progress in the Science and Practice of Anesthesia, J. A. M. A. **77**: 421 (Aug. 6) 1921.
11. Gwathmey, J. T., and Greenough, J.: Ann. Surg. **74**: 185 (Aug.) 1921.

REPORT OF CASES

CASE 1.—A large, robust man, aged 64, with carcinoma of the pylorus, underwent partial gastrectomy and posterior gastro-enterostomy. The duration in the operation was two hours, forty minutes; of the anesthetic, two hours, fifty minutes. Ether, 240 c.c. (8 fluidounces), was given. The average pulse was 110. The blood pressure at the start was: systolic, 142; diastolic, 90; at the first indication of shock: systolic, 138; diastolic, 78; at the end of the operation: systolic, 85; diastolic, 65 (Chart 1). There was no postoperative pain, nausea, vomiting or chill. The patient showed shock the last half hour of the operation. Relaxation was good. No morphin was given after the operation. There was no laxative effect, distention, excitement stage or abscess.

CASE 2.—A woman, aged 26, well nourished, with bilateral salpingitis, bilateral cystic ovary, pelvic adhesions, chronic endometritis and syphilis, suffered intense pain and was very apprehensive. She had had two previous anesthetics. She was accustomed to the use of morphin and other sedatives. The operation included dilation and curettage; bilateral salpingo-oophorectomy and release of adhesions. The duration of operation was one hour, forty-five minutes, of the anesthetic, one hour, thirty-five minutes. Ether, 225 c.c. (7½ fluidounces), was used. The average pulse was 100. The blood pressure showed a steady curve, with no sharp rise or fall. The effects were very good: good relaxation, no shock, no pain, nausea or vomiting, and no distention, laxative effects, abscess or excitement stage. The first sedative after operation was given in twenty-three hours (Chart 2).

TABLE 1.—CASES WITH SYNERGISTS *

Number	Operation	Duration H.	Duration M.	Ether Used, C.c.	Preoperative Morphin, Grain	Time of Postoperative Sedative	Hypodermoclysis	Nausea or Vomiting
1 (11768)	Partial gastrectomy; postgastro-enterostomy	3	..	240	¾	None	H	None
2 (11588)	Bilateral salpingo-oophorectomy; release of pelvic adhesions; dilation and curettage	1	55	225	¾	23 hrs.†	H	None
3 (11684)	Herniotomy (recurrent)	1	5	165	¼	None	H	None
4 (11617)	Oophorectomy; repair of intestine	2	..	180	¾	None†	H	None
6 (11685)	Appendectomy	..	55	105	¾	None	..	None
7 (11909)	Appendectomy	..	30	75	½	None	..	None
8 (11959)	Appendectomy	..	45	120	¼	None	..	Slight
9 (11473)	Prostatectomy	1	15	127	¾	None	H	None
10 (11564)	Cholecystectomy; appendectomy	1	45	195	¾	14 hrs.	H	Slight
11 (11692)	Cholecystectomy	1	20	195	¾	14 hrs.†	H	Slight
12 (11954)	Panhysterectomy	1	15	135	¼ pantopon	None		
13 (11619)	Dilation and curettage; trachelorrhaphy; perineorrhaphy; partial oophorectomy; bilateral salpingectomy	1	25	120	¾	16 hrs.	None	Slight
14 (11904)	Dilation and curettage; trachelorrhaphy; hemorrhoidectomy; bilateral salpingectomy; left oophorectomy; ventral suspension; appendectomy; release of adhesions	1	10	120	1	5 hrs. 17 hrs. 25 hrs.	None	None
15 (11642)	Cesarean section	..	50	180	1	8 hrs. 18½ hrs	None	None
16 (11781)	Cesarean section	1	7	180	¾	5½ hrs.	None	None

* Eight cases, no morphin after operation; ten cases, no vomiting or nausea; seven cases, sedative required. Average time for sedative: (a) morphin, 17 hours; (b) pantopon, 8⅝ hours. Average time for operation, 1 hour 21 minutes. Average amount of ether, 157 c.c. or 5¼ fluidounces.
† Patients accustomed to large doses of morphin preoperatively for pain.

CASE 3.—A stout woman, aged 31, with recurrent hernia, had had three previous anesthetics. This is a case of the same operation and the same patient (Table 2, Case 23). At the first operation for hernia, straight ether was used, and the patient was nauseated and vomited for three days. Hernia recurred from the effects of vomiting. Four postoperative hypodermics of morphin were necessary to relieve pain. Distention and gas pains were very severe for four days. The second operation for recurrent hernia was performed with the Gwathmey technic. The pulse during operation was 84. Ether, 165 c.c. (5½ fluidounces) was given. The effects were good; relaxation was good; there was slight regurgitation of mucus. There was no distention, gas pains, postoperative vomiting, laxative effects or abscess.

TABLE 2.—CASES WITHOUT SYNERGISTS *

Number	Operation	Duration H.	Duration M.	Ether Used, C.c.	Preoperative Morphin, Grain	Time of Postoperative Sedative	Vomit	Pulse
17 (10871)	Appendectomy	..	48	210	¼	6 hrs.	+	120
18 (10927)	Appendectomy	..	45	270	¼	1½ hrs.	+	114
19 (10917)	Appendectomy	1	10	240	¼	4 hrs.	+	96
20 (10961)	Appendectomy	1	5	180	¼	None	+	90
21 (11048)	Cholecystectomy; appendectomy	1	45	330	¼	6 hrs.	++	144
22 (1725)	Cholecystectomy; appendectomy	1	15	210	¼	6 hrs.	+	
23 (9084)	Herniotomy	1	30	240	¼	2, 4, 5, 8, 11 hrs.	++	120
24 (2242)	Herniotomy	..	55	180	¼	9 hrs.	+	90
25 (11882)	Hysterectomy	1	30	240	¼	6 hrs.	++	110
26 (11102)	Bilateral salpingo-oophorectomy; dilation and curettage; perineorrhaphy; resection cystic ovary, right	1	50	300	⅝ pantopon	4 hrs.	None	120
27 (10886)	Dilation and curettage; hemorrhoidectomy; trachelorrhaphy; bilateral salpingectomy; Baldy-Webster suspension	1	55	225	¼	1½ hrs.	+	113
28 (10925)	Bilateral salpingo-oophorectomy; ventral suspension; release of adhesions	1	35	200	¼	6 hrs.	Nausea	102
29 (1859)	Same as 28	1	40	270	¼	5 hrs.	+	

* Average time of next sedative, 5⅛ hours; average amount of ether, 246.5 c.c. (8⅓ ounces). Average time for operation, 1 hour 22 minutes.
† Same patient; same operation; same operator (Table 1, Case 3).

CASE 4.—A robust woman, aged 26, with a cystic right ovary, had had three previous laparotomies with stormy postoperative periods. She was apprehensive. She was accustomed to large doses of morphin. Oophorectomy was performed with repair of the sigmoid. The pulse averaged 85. The duration of the anesthetic was one hour, thirty minutes, and of the operation, one hour, thirty-five minutes. Ether, 180 c.c. (6 fluidounces), was used. The effects were very good. Relaxation was good, and there was no shock, pain, nausea, vomiting or distention. The next sedative was given after fifteen and one-half hours. Water was given on request with no detrimental results.

CASE 5 (11933).—A robust girl, aged 15, with acute appendicitis, underwent appendectomy. Ether, 75 c.c. (2½ fluidounces). No hypodermoclysis was employed. Before the operation, two doses of morphin, ⅒ grain (6.5 mg.), with magnesium sulphate were given. The results were good; excellent relaxation, and no pain, shock, nausea, vomiting, distention or gas pains. In simple appendectomies we have found that the hypodermoclysis may easily be omitted.

COMPARISON OF RESULTS

In comparing the tables we find these advantageous results:

1. The synergistic effect of magnesium sulphate with the preoperative morphin tends to prolong the sedative action to such an extent that rarely is it necessary to give morphin postoperatively.

2. There is very little paresis of the intestine, and there are less acidosis and nausea, with vomiting practically eliminated except when the gallbladder has been emptied or removed.

3. The synergistic analgesia is prolonged to a greater extent by the use of morphin than with pantopon.

4. The amount of ether used is lessened, thus reducing to a minimum bronchial and renal irritation, and causing less acidosis.

5. There are no distention and no gas pain.

6. There have been no deleterious results, such as abscess, necrosis of tissue or laxative effect.

With the alkaline synergistic method the postoperative condition is entirely altered. There is an absence of gas and wound pains and no distention, which with subsequent improved appetite and lessened mental depression makes convalescence shorter and more agreeable.

ABDOMINAL MIGRAINE

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Abdominal migraine is not mentioned in most books on gastro-enterology and may easily be overlooked unless this disease is kept in mind when the physician is confronted with a case of functional epigastralgia. Even neurologic textbooks mention but a few cases. The condition is not, however, as rare as one might suppose.

Only recently has the close relation between certain forms of periodic epigastralgia and head migraine been pointed out.[1] A few writers have expressed the opinion that this type of abdominal pain is simply another form in which migraine may manifest itself; others have reported cases in which this epigastralgia was distinctly a temporary and vicarious substitute for the usual form of head migraine.

The present study is based on a consideration of twenty-two cases seen at the polyclinic of Dr Paul Cohnheim of Berlin. All precautions were taken to exclude every kind of organic disease of the nervous system or abdomen, and most of the cases have been under observation for a number of years.

This type of epigastralgia is distinguished by periodicity, often coming on with almost mathematical regularity; the intervals between attacks are symptomless; there is a history of migraine in either the patient or his family, and there are no evidences of organic diseases, such as tabes, gallstones, pancreatic disease or subdiaphragmatic angina pectoris, even after careful and prolonged observation over a number of years. Improvement was noted in many of the cases after antimigraine treatment when other measures were without result.

The cases cannot be classified in any of the groups described as neuralgia of the celiac plexus, vagus or sympathetic systems as described by several authors.[2]

Abdominal migraine may manifest itself in three forms:

1. The ordinary type, in which the epigastralgia is accompanied by head migraine or appears as the only symptom of migraine disease.

2. The vicarious type, in which typical head migraine alone has existed up to a certain time; after which, the abdominal migraine appeared and remained as the only manifestation of migraine disease. Cases have been reported in which the cephalic migraine returned after a year or two, but the vicarious, abdominal form disappeared on the return of the head migraine.[3] Cases have also been described in which the attacks of abdominal and head migraine alternated, the one form not manifesting itself while the other was present. This kind of cases was described by Ortner,[1] Schmidt [1] and Bordoni.[4]

3. The larval or irregular type, in which the periodic attacks consist of vomiting, etc., while the epigastralgia is less marked.

The individual attacks are much alike in the first two groups. They will, therefore, be described together. The typical attack begins abruptly; recurs at definite intervals, generally every four to six weeks; lasts three or four days, and ends as abruptly as it began. The interval between attacks is free from all symptoms. The first group makes its first appearance at about 18 years of age, the vicarious form usually at the menopause, while no definite age was noted in the larval group. Eighteen of the twenty-two cases were in women.

The attack consists usually of a severe, cutting or boring epigastralgia which is independent of and uninfluenced by food and which may radiate in any direction, but is usually limited to the epigastrium. The vomiting is chiefly of bile and mucus, and has no influence on the pain. Constipation is common, but diarrhea is not at all infrequent during an attack. The typical form of head migraine may or may not accompany the attack in the first form. Fever and other signs of infection are absent. There seems to be no definite cause for the appearance of an attack, such as a dietetic error. Most of the patients had anorexia and nausea during the attack, but were perfectly well during the intervals.

Physical examination revealed no definite or constant findings except, perhaps, increased knee reflexes and evidences of a neurotic constitution. The examination of the stomach contents showed nothing abnormal except an occasional subacidity. This seems to be in contrast to the findings of Fenwick [5] and others in some of the cases classified as larval or irregular abdominal migraine, in which a periodic hyperacidity was found at the time of the attack, with return to normal during the intervals. As already mentioned, antimigraine treatment influenced the course and individual attacks favorably. Case 1 illustrates the type of the first group:

Case 1.—J. U., a man, aged 32, hatmaker, admitted, June 4, 1914, had been ill for six months previous to admission, with periodic attacks of severe epigastric pains accompanied by vomiting and mild constipation. Severe head migraine appeared on the second day of the attack. The attacks occurred every four weeks, and lasted from one to four days; the intervals between attacks were free from all disturbances. There were no dietic errors or other known cause for the appearance of the attacks. The examination detected nothing of importance; the test breakfast revealed a slight subacidity with a total acidity of 40. The Wassermann reaction was negative. Improvement occurred under antimigraine treatment.

The attacks in the vicarious group show no great difference from those already described. This type occurs most frequently at the time of the menopause

1. Mohr and Staehlin: Handbuch der inneren Medizin **5**. Oppenheim, H.: Lehrbuch der Nervenkrankheiten. Schmidt, A.: Klinik der Darmkrankheiten, 1921. Flatau, E.: Die Migräne, Gesamtgeb. d. Neurol. u. Psychiat., 1912. Ortner, N.: Klinische Symptomatologie inneren Krankheiten **1**. Curschmann: Deutsch. Ztschr. f. Nervenh. **54**, 1915.

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4. Bordoni, L.: Rif. med. **14**: 100, 1898.

5. Fenwick, S.: Lancet, Jan. 8, 1898.

in women who have previously suffered from typical attacks of cephalic migraine. Case 2 is illustrative of this form:

CASE 2.—A. M., a woman, aged 39, housewife, admitted, March 30, 1914, for four months had had periodic attacks of severe epigastric pains with nausea and vomiting of a watery substance which lasted several hours and came without apparent cause. She had three bowel movements daily at the time of the attack. She had severe head migraine formerly, but this had not been present since the time that the periodic attacks of epigastralgia had appeared. She was treated for gastric ulcer without result. The examination revealed nothing except a hyperesthesia of the skin of the epigastrium.

Another type of vicarious abdominal migraine is well seen in a case described by Ortner:

A man, aged 30, complained of attacks of colicky pain in the liver region. The attacks of typical head migraine alternated with attacks of migraine in the liver region. The two did not appear during the same attack. There was a distinct history of migraine in the patient's family. There was no urobilin or urobilinogen in the urine, no findings on palpation, such as tenderness or enlargement of the liver or gallbladder, and no hyperesthesia of the skin over the painful area. Chills and fever were absent. The vomiting appeared at the end of the attack, in contrast to the early vomiting in cholelithiasis, and relief was obtained after the use of antimigraine treatment.

The irregular or larval group consists of several different types. There was only one case in this series, but various authors have described cases in which the attacks consisted chiefly of periodic spells of ravenous hunger, attacks of nausea and vomiting,[6] and periodic hypersecretion with epigastralgia and hyperacidity as described by Rossbach under the name of gastroxynsis.[7]

In view of the fact that in many of the cases in women there are accompanying disorders in the pelvis, and that the vicarious form appears chiefly at the time of the menopause, it is suggested that a course of therapy with ovarian extract be tried out in addition to the usual migraine treatment. In passing, it may be mentioned that the prognosis seems to be that of migraine in general, as none of the patients who have been under observation for a long time have shown any serious effects of the disease.

There seems to be considerable doubt as to the seat of the pain; but, according to the most recent views, we are led to believe that the epigastralgia in these cases arises in the celiac plexus and its branches.[8] There is little reason to believe that the periodic dilatation of the stomach which was observed by Mangelsdorf[9] during attacks of migraine has any real share in the causation of the pain.

SUMMARY

1. Abdominal migraine occurs chiefly in those who suffer from typical head migraine or when there is a history of this disease in the family.

2. The disease manifests itself by periodic attacks of epigastralgia with nausea and vomiting of bile and mucus, and occasionally with diarrhea. Physical examination reveals no definite signs of any kind. The patient is free from all symptoms during the intervals between attacks. The attacks last a few days, and begin and end rather abruptly.

3. The disease is refractive to all treatment, but is favorably influenced by antimigraine therapy. In view of the frequent presence of disturbances in the female pelvis, it is suggested that a course of ovarian extract be tried in these cases in addition to the regular arsenic and antimigraine measures.

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SPONTANEOUS LABOR IN A CASE OF DECENTRALIZED UTERUS *

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It is traditionally known that pregnancy and labor can occur in women with transverse lesions of the spinal cord, although a careful search of the literature fails to reveal a well authenticated case. The report of a case seems permissible because of its rarity and physiologic interest.

The autonomic[1] character of certain portions of the central nervous system and the innervation of viscera by this mechanism have long been of the greatest physiologic interest. Much has been added to our knowledge by the study of spinal cord injuries received in the late war, especially by the work of Head and Riddock.[2] The observations which they made were largely confirmatory of earlier experiments on animals. Thus, their descriptions of the "automatic bladder" as observed in man are much the same as described in 1896 by Goltz and Ewald[3] by the term "spontaneous micturition," after section of the spinal cord of the dog.

In view of the stimulus produced by these recent studies, it is of interest to report a case of pregnancy with normal and spontaneous labor occurring in a woman with a decentralized uterus due to spinal cord disease. It has long been known that the uterus is an autonomic organ. As early as 1874, it was shown experimentally by Goltz[4] that normal pregnancy and labor occurred in the dog after complete division of the cord.

A subject of much dispute, leading to careful experimental study, is the nerve mechanism of the bladder and uterus. A masterly review of the literature and a report of his own experiments on the nerve supply of the bladder has recently been made by Fearnsides.[5] He concluded that afferent impulses from the bladder travel chiefly through the pelvic nerves, but to some extent through the hypogastric nerves. He believes that it is now absolutely certain that the bladder is supplied by two sets of efferent nerves. The first set are derived from the lowest thoracic and upper lumbar nerve roots. They send their fibers, by way of the white rami communicantes and the lumbar or inferior

* From the Surgical Service, Peter Bent Brigham Hospital.

1. Langley: On the Union of Cranial Autonomic (Visceral) Fibers with the Nerve Cells of the Superior Cervical Ganglion, J. Physiol., 1898. "The word implies a certain degree of independent action, but exercised under control of a higher power. The 'autonomic' nervous system means the nervous system of glands and of the involuntary muscle; it governs the 'organic' functions of the body."
2. Head and Riddock: The Automatic Bladder, Excessive Sweating and Some Other Reflex Conditions, in Gross Injuries of the Spinal Cord, Brain **40**: 188, 1917. The Reflex Functions of the Completely Divided Spinal Cord in Man, Compared with Those Associated with Less Severe Lesions, Brain **40**: 264, 1917.
3. Goltz and Ewald: Arch. f. d. ges. Physiol. (Pflüger's) **73**: 362, 1896.
4. Goltz: Ueber den Einfluss des Nervensystems auf die Vorgänge während der Schwangerschaft und des Geburts, Arch. f. d. ges. Physiol. (Pflüger's) **9**, 1874.
5. Fearnsides: The Innervation of the Bladder and Urethra, Brain **40**: 149, 1917.

splanchnic nerves, to the lumbar portion of the collateral sympathetic chain of ganglions. They join the inferior mesenteric ganglions and, finally, by way of the hypogastric nerves, reach the hypogastric plexus of the bladder. The second set of nerves to the bladder originate in the roots of the sacral nerves. From these roots two branches are given off, known as the nervi erigentes (Eckhard), the pelvic splanchnics (Gaskell) or the pelvic nerves (Langley), which run to the vesical part of the hypogastric plexus and so supply the unstriped muscle of the bladder, urethra and corpora cavernosa, while the two pudic nerves form the motor path to the striped voluntary muscle of the urethra. Fearnsides found that stimulation of the pelvic nerves caused contraction of the bladder, followed immediately by relaxation. In some animals, such excitation led to inhibition of the sphincter muscle at the neck of the bladder and of the unstriped muscle surrounding the urethra, with consequent dilatation of the urethra. Stimulation of the hypogastric nerves caused "a constriction of the unstriped muscle of the urethra and a contraction of the muscle at the base of the bladder, with or without a concomitant contraction or relaxation of the rest of the bladder."

The nerve mechanism of the uterus has long been a subject of dispute among investigators. Gaskell,[6] in 1886, wrote:

> The uterus is supplied with two sets of nerves, the nervi uterini, which reach the uterus by way of the main sympathetic and hypogastric nerves and therefore belong to the abdominal splanchnics, and the nervi uterini sacrales, which pass free from the main sympathetic chain and belong to the pelvic splanchnics. Further, according to von Basch and Hofmann, stimulation of the hypogastric nerves causes a contraction of the circular muscles of the uterus, while stimulation of the cerebrospinal nerves causes the longitudinal muscles to contract.

There is much difference of opinion as to the effect of the sacral nerves. Frankenhauser[7] at first considered that they had an inhibitory action, but later withdrew this opinion. Langley and Anderson[8] carried out repeated experiments on the rabbit and cat, which showed that the uterus and vagina are supplied by fibers which pass out through the anterior roots of the second, third, fourth and fifth lumbar nerves, and run through the sympathetic to the inferior mesenteric ganglions, whence they proceed by the hypogastric nerves. They found that the lumbar nerves caused contraction of the small arteries, leading to pallor of the organ, and contraction of the whole musculature. The uterus and vagina became fatigued on frequent stimulation sooner than any other organs; hence, the longer the stimulus is applied, the longer should be the interval between stimulations.

Stimulation of the sacral nerves, or the pelvic nerve near its origin, has no direct effect on the uterus or vagina. Nor do the sacral nerves have an inhibitory effect, for their stimulation does not modify rhythmic uterine contractions nor cause elongation or flabbiness of the organ.

REPORT OF CASE

History.—E. M. (14325), an Italian housewife, aged 35, entered the hospital, April 8, 1921, complaining of paralysis of the legs. Her family and personal history were essentially negative. She had been married nine years. Her husband and three children were living and well. There had been no miscarriages and no stillbirths. Aside from the diseases of childhood, she had had no serious illness. Syphilis and gonorrhea were denied. Menstruation began at the age of 13, and the periods were regular in duration, with no abnormalities. The patient was well until a year before admission, at which time she had influenza. At this time she was sick for a week, but about a month later she noticed knifelike pains, which occurred through the shoulders whenever she moved any part of her body. The pain gradually became a steady ache, which persisted for six months. Five months before admission, the pain disappeared, but she noticed weakness of the arms and legs. She found that she could no longer sew because she did not have strength in the fingers to hold the needle. When she tried to walk, the knees were weak and shaky. She had some slight pains in the arms, particularly on the outer part and in the outer two fingers of both hands. The weakness continued to increase; and the patient found that she was pregnant. Three months before admission a lump appeared in the left side of the neck. This gradually increased in size. Three weeks before admission, the patient's weakness forced her to go to bed. Paralysis of the legs had been complete since that time. The two inner fingers of both hands now felt numb, especially at night. She slept poorly and felt as if her legs were "flying away from her." She had frequent drenching sweats of the neck and head, especially at night. At times during the month before admission she had gone for from twenty-four to forty-eight hours without voiding.

Physical Examination.—The patient was well developed and rather poorly nourished. She lay quietly in bed, in no apparent distress. There was pain on pressure, which radiated from the seventh cervical vertebra to the base of the skull, but with no rigidity of the neck. On the left side of the neck, there was a fluctuating mass 8 by 4 cm. (3⅛ by 1⅝ inches), not tense nor painful to pressure, and not limiting motion on that side. The abdomen was protuberant, and what appeared to be the fundus of the uterus reached a little above the umbilicus. Fetal heart sounds could be heard on the left side, and fetal parts were definitely made out. Vaginal examination revealed a soft cervix, and the uterus, reaching to the umbilicus, could be bimanually palpated.

Neurologic Examination.—Examination of the cranial nerves was entirely negative. There was no evidence of any cerebral or cerebellar involvement. Examination of the motor nerves revealed that the patient was able to move both hands and arms without difficulty, but the grip was very weak in both hands, particularly of the ulnar fingers. Respirations were of the diaphragmatic character, and the patient was not able to move her abdominal muscles. Both lower extremities were flaccid and could not be moved by the patient. Examination of the sensory nerves revealed that, from the level of the seventh cervical vertebra to Poupart's ligament on either side, the skin was hypesthetic. There was marked hypesthesia of the thighs and legs. In the region around the vulva supplied by the fourth and fifth sacral segments there was normal sensation. The region of the inner side of both arms supplied by the eighth cervical and first dorsal segments showed marked hypesthesia. Sensation of change of temperature was decreased from the seventh cervical vertebra to Poupart's ligament, and over both lower extremities. Muscle sense in both lower extremities was entirely absent.

All the deep reflexes were exaggerated. There was a definite bilateral ankle and patellar clonus, and a positive Babinski reaction. The upper and lower abdominals and the epigastric reflexes were absent.

On admission there was no incontinence of urine or of feces.

Vasomotor response was not obtained over the abdomen, although the legs flushed and were moist.

Subsequent Course.—On admission, films of the cervical spine and dorsal vertebrae showed no evidence of any bony changes. April 10, a combined cistern-lumbar puncture was made by Dr. James B. Ayer, and a complete block in the spinal cord was demonstrated. April 15, the swelling in the neck was tapped, and 5 c.c. of a thick yellowish-green fluid was withdrawn. Smears showed polymorphonuclears and lymphocytes. No organisms were found, and cultures were negative. The following day the tumor was tapped again; air was

6. Gaskell: On the Structure, Distribution and Function of the Nerves Which Innervate the Visceral and Vascular Systems, J. Physiol. 7:1, 1886.
7. Frankenhauser: Die Nerven der Gebärmutter, Jena, 1867.
8. Langley and Anderson: The Innervation of the Pelvic and Adjoining Viscera, J. Physiol. 19:71, 1896.

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injected, and roentgenograms were made. Stereoscopic plates revealed that the air lay between the muscle planes on the lateral aspect. There was no evidence of destruction of any of the vertebrae. April 20, under local anesthesia, exploration of the tumor on the left side of the neck was made. A large cyst filled with greenish-yellow, purulent material was revealed. No connection with the spine could be demonstrated. The contents were evacuated and the cyst wall was partially removed. A guinea-pig was inoculated and sections were made of the lining of the cyst wall. The wound in the neck healed well, with the exception of a small persistent sinus. At this time, the patient began to have a slight elevation of afternoon temperature two or three days a week. May 16, roentgen-ray examination was repeated, and the cervical spine for the first time showed a destructive process taking place in the sixth cervical vertebra. Examination of the pig injected with the contents of the cyst revealed tuberculosis. The patient showed evidence of consolidation of the right side, and roentgenograms made on May 23 disclosed a bronchopneumonic process, extensive and bilateral. The density indicated a tuberculous pneumonia.

Pregnancy continued without any abnormality, and it was believed that the patient was near full term. Dr. F. S. Newell saw the patient in consultation and, believing that the case was hopeless from the point of view of the mother, advised continuing the pregnancy for the sake of the child. May 28, spontaneous labor occurred. The patient suffered practically no pain. The uterine contractions came every five to ten minutes and lasted from thirty to forty seconds, gradually increasing in frequency and intensity. Two hours after the onset of labor the patient was delivered of a baby girl, weighing 6 pounds (2.7 kg.), which breathed immediately and cried vigorously. The position was occipitoposterior. The patient had some pain during the second stage of labor. The force which caused the expulsion of the child appeared to be wholly uterine and there were no bearing down efforts on the part of the patient. Following delivery, interesting observations were made on the reflexes of the bladder. After retention for from six to eight hours, the patient would void and apparently empty the bladder without any sensation or knowledge of the act. During this period, loss of sensation over the whole body, from the seventh cervical vertebra down, became complete, including the region of the vulva, which on admission had shown practically normal sensation. The bilateral Babinski sign became more marked, and on stroking the sole of either foot there was a spontaneous flexion of the thigh and leg. For a few days after delivery, the patient appeared to be in better physical condition, but on the third day there was a sudden change for the worse, and death occurred the ninth day, from a diffuse tuberculous pneumonia.

COMMENT

The final explanation for the occurrence of normal labor after a fixed interval is unknown.[9] Menstrual periodicity, distention of the uterus, heredity, excess of carbon dioxid in the maternal blood and other factors have been advanced from time to time. The most probable explanation seems to be that some substance gains access to the circulation, and directly or indirectly stimulates the uterus to contraction.

Krureger and Affergeld[10] found that, in a dog's uterus separated from all connection with the central nervous system, pregnancy advanced to full term and labor occurred spontaneously. The present case is somewhat analogous, in that a woman with an almost complete transverse spinal lesion at the seventh cervical segment went through normal labor. The slight pain accompanying labor was undoubtedly due to an incomplete lesion.

It was noted that there were periods during which this patient went for from twenty-four to forty-eight hours without voiding. Retention was followed, on entry to the hospital, by apparently normal micturition. As the disease advanced and cerebral control was lost, the bladder emptied itself automatically without the patient's being aware of the passage of urine. The deep reflexes (patellar, etc.) were exaggerated; there was a patellar and ankle clonus, and Babinski reaction.

In 1890, Bastian[11] stated that, when "spinal function was liberated from cerebral control," there was a flaccid paralysis with an absence of knee jerks, and complete sensory loss. This condition of "spinal shock" was noted by Head and Riddock[2] in their cases, but they further observed that following the "stage of flaccidity" there ensued a stage of "reflex activity," with return of muscle tone, the establishment of the "automatic bladder" and exaggerated reflexes. In a case like the one reported, the slow progress of the disease caused no symptoms of "spinal shock," but a gradual progression to a stage analogous to the spinal animal, with increased reflex activity.

The patient had drenching sweats of head and neck, and a vasomotor reaction of flushing with sweating was obtained over the lower limbs. The sweating above the lesion is explained from the anatomic distribution of the autonomic nerves, for the preganglionic fibers, after leaving the cord, ascend in the sympathetic chain to the stellate ganglion. Thus, according to Head and Riddock,[2] "in patients in whom cord transection is above the tenth dorsal segmental level, sweating will occur, not only from the skin of the paralyzed parts, but also above the upper level of lost sensibility."

CONCLUSION

1. In a case of cervical Pott's disease, with an almost complete transverse lesion of the seventh cervical segment, pregnancy went to full term, when normal and almost painless labor occurred.

2. Cases of this kind serve to place the uterus among the autonomic organs of the body and indicate that the initial stimulus to labor originates by some other mechanism than cerebral control.

9. Hippocrates explained the onset of labor by hunger of the fetus.
10. Krureger and Affergeld: Der Vorgang von Zeugung, Schwangerschaft, Geburt und Wochenbett an der Ausgeschalteten Gebärmutter, Arch. f. Gynäk. **83**: 257, 1907.
11. Bastian: On the Symptomatology of Total Transverse Lesions of the Spinal Cord, Med. Chir. Tr. **73**: 151, 1890.

THE CURE OF INFANTILE RICKETS BY SUNLIGHT

ACCOMPANIED BY AN INCREASE IN THE INORGANIC PHOSPHATE OF THE BLOOD *

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AND
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It has been shown in preliminary communications[1] that infantile rickets can be cured by frequent exposures to the sun's rays; that although the diet remains unchanged, the rachitic lesions, as seen under the roentgen ray, disappear in the course of a month or six weeks, if infants are given almost daily sun treatment for from one-half to one hour. The results do not imply that there is no relation between the occurrence of rickets and diet, but they certainly must be interpreted as showing that hygienic factors, more par-

* Read before the Society of Experimental Biology and Medicine, Oct. 19, 1921.
* From the Department of Pathology, Columbia University College of Physicians and Surgeons.
1. Hess, A. F., and Unger, L. J.: Proc. Soc. Exper. Biol. & Med. **18**: 298, 1921; The Cure of Infantile Rickets by Sunlight, J. A. M. A. **77**: 39 (July 2) 1921.

ticularly sunlight, are concerned in the etiology of this important nutritional disorder.

More recently, animal experiments carried out in this laboratory,[2] and, independently, elsewhere,[3] have confirmed these clinical observations of the curative process of heliotherapy. The experiments demonstrated that when rats were fed on a standard diet, rickets would be either prevented or brought about, according to whether the animals were subjected for a short period to the sun's rays, or at all times kept in the dark. The rats which we employed were fed on the diet described by Sherman and Pappenheimer,[4]

TABLE 1.—BLOOD PHOSPHORUS IN NORMAL INFANTS

Patient	Age, Mos.	Mg. Phosphorus per 100 C.c. Blood: Inorganic	Total	Patient	Age Mos.	Mg. Phosphorus per 100 C.c. Blood: Inorganic	Total
M. K.	6	4.40		P. D.	10	4.48	45.8
B. S.	3	4.33	58.3	S. D.	10	4.31	46.3
F. M.	15	4.60	41.6	B. M.	12	4.60	53.5
B. S.	3	4.42	56.8	A. M.	11	4.76	37.8
H. H.	11	4.80	43.0	H. M.	7	4.10	62.8
G. H.	8	4.69	34.4	B. F.	6	4.00	
M. D.	4	4.65	57.5	A. R.	13	4.44	52.5
J. F.	18	4.44	40.6	D. B.	9	4.17	39.4
B. R.	11	4.39	43.6	H. R.	13	4.61	40.5
W. L.	8	4.10	67.1	S. F.	6	4.00	
J. R.	6	4.10	62.5	H. B.	9	4.40	
B. B.	6	4.05	..	L. S.	12	4.00	
A. S.	6	4.25	54.7	S. B.	14	4.80	
A. A.	2	4.17	35.0	M. G.	5	4.24	
M. C.	11	4.14	..	T. L.	20	4.04	
T. S.	10	4.30	41.4	F. B.	16	4.13	

which, in this laboratory, has led, in every instance, to the development of rickets. The experience of Huldschinsky [5] and others,[6] as well as our own, with rays produced by the mercury vapor quartz lamp, makes it probable that the ultraviolet radiations play a large rôle in the curative power of the sun. The present report of the efficacy of sunlight adds substantiation of a definite chemical nature to clinical observations, and to the experimental evidence to which we have referred.

In a recent article, Howland and Kramer [7] have shown that the serum of infants suffering from active rickets contains a diminished amount of inorganic phosphate and that during the process of healing following the administration of cod liver oil, the phosphate content gradually rises to the normal level. In view of the marked clinical improvement which was noted following heliotherapy, it seemed of interest to ascertain whether this procedure led to a change in the level of blood phosphate. In this way, a further and perhaps more convincing substantiation of our results could be furnished. For this purpose, the rapid colorimetric method of Bell and Doisy [8] was used, in which the color is developed in protein free filtrates through the reduction of phosphomolybdic acid by hydrochinon in alkaline sulphite solution. It was found important to use a minimum quantity of oxalate. Special attention was paid to the inorganic phosphate of the blood, although in many instances the so-called acid-soluble and total phosphorus were also estimated. The figures for the inorganic phosphate, as carried out by this method, are remarkably constant, as will be seen in Table 1. The normal figure is about 4 mg. phosphorus (present as inorganic phosphate) per hundred cubic centimeters of blood. However, the accuracy of this method for the determination of acid-soluble phosphorus seems questionable. We, therefore, omit all figures on this factor.

2. Hess, A. F., and Unger, L. J.: Proc. Soc. Exper. Biol. & Med. **19**: 8, 1921.
3. Shipley, P. G.; Park, E. A.; Powers, G. F.; McCollum, E. V., and Simmonds, N.: Proc. Soc. Exper. Biol. & Med. **19**: 43, 1921.
4. Sherman, H. C., and Pappenheimer, A. M.: J. Exper. M. **34**: 189 (Aug.) 1921.
5. Huldschinsky, K.: Ztschr. f. orthop. Chir. **39**, 1920.
6. Putzig, H.: Therap. Halbmonatsh. **34**: 234 (April 15) 1920. Riedel, G.: München. med. Wchnschr. **67**: 838 (July 16) 1920. Erlacher, P.: Wien. klin. Wchnschr. **34**: 241 (May 19) 1921.
7. Howland, John, and Kramer, Benjamin: Calcium and Phosphorus in the Serum in Relation to Rickets, Am. J. Dis. Child. **22**: 105 (Aug.) 1921.
8. Bell, R. O., and Doisy, E. A.: J. Biol. Chem. **44**: 55 (Oct.) 1920.

TREATMENT

The infants were placed in the direct sunlight for from one-half hour to several hours, the period varying according to the sun's intensity, the clemency of the weather, and the sensitiveness of the baby. It is necessary that the sunlight be direct, and not transmitted through clothing or through the window glass; otherwise it loses the greater part of its curative potency, as the result of filtering out the effective rays. As has been stated in a previous communication, such treatment cannot be carried out in a routine manner, but must be varied according to the condition of the babies, some of whom are far more sensitive to sunlight than others. At all times, care was taken that the infants were warm. It was found quite sufficient to expose the arms and legs, although it is preferable, when the temperature permits, to expose the trunk as well.

Previous to treatment, the majority of infants showed the clinical symptoms of mild rickets, characterized by beading of the ribs, and the characteristic changes in the epiphyses as seen by roentgen-ray examination. All the children were receiving the customary milk mixtures and orange juice, the older ones getting cereal in addition. Reliance was not placed entirely on the roentgen-ray examination of the bones, as it has been our experience that infants may manifest the classical signs of rickets, accompanied by a low inorganic phosphate of the blood, and, nevertheless, show normal bony contours at the wrists and other joints.

In every instance in which heliotherapy was employed, the rachitic signs diminished, as was demonstrated clinically and by roentgen ray, and the general condition improved. Table 2 records the successive examinations of the blood of these infants, and requires but little interpretation. It will be seen that the inorganic phosphate of the blood of the rachitic infants decreased from month to month, starting generally below 3.5 mg. per hundred cubic centimeters of blood, and gradually being restored to the normal level of about 4 mg. This result is similar to that which has been attained by means of cod liver oil, which must be considered a specific for this disorder. Little can be stated at present regarding the determinations of the "acid-soluble" and the total phosphorus, as these figures were not sufficiently constant to warrant deductions.

TABLE 2.—BLOOD PHOSPHORUS OF RACHITIC INFANTS TREATED WITH SUNLIGHT

Patient	Age, Mos.	Inorganic Phosphorus: 6/22	7/21	8/11	9/16	10/18	Acid Soluble*	Total*
F. R.	7	2.80	3.75	4.14	4.13	....	15.7	43.6
P. F.	5	3.7	3.4	4.16	4.22	....	23.0	41.0
I. A.	13	2.77	2.75	3.53	4.00	....	15.2	42.6
M. L.	8	3.1	3.18	3.75	4.38	....	15.0	36.0
R. M.	15	3.0	3.02	3.16	3.87	....	14.5	44.6
C. M.	37	3.4	....	....	3.77	4.3	19.3	52.0
T. M.	7	3.0	....	....	3.9	4.0	16.6	38.5

* Analyses made with blood used for the first inorganic phosphorus determination.

CONCLUSION

It is evident that sunlight not only brings about a clinical cure of the characteristic lesions, but also brings about an increase in the inorganic phosphate of the blood similar to that noted when the cure is accomplished by means of the specific cod liver oil. This observation is of interest both as additional testimony of the curative value of sunlight in this disorder, and as evidence that the curative process occasioned by these divergent therapeutic agents will probably be found to be fundamentally the same. These results establish a chemical basis for the use of heliotherapy in rickets. Furthermore, they furnish the first definite evidence of metabolic change in the animal body brought about by the solar rays.

ASYNCHRONISM OF THE RESPIRATORY MOVEMENTS IN LOBAR PNEUMONIA

SECOND COMMUNICATION *

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In a previous paper [1] I called attention to a type of breathing which, though of common occurrence in severe cases of lobar pneumonia, had all but escaped observation.

Briefly, this type of breathing is characterized by a separation of the moment of contraction of the diaphragm and intercostal (and other thoracic) muscles by a definite though variable time interval. The diaphragm contracts first, the adbomen protrudes, and then, after varying intervals, contractions of the intercostal muscles follow. The lowermost intercostals may contract first and the movement of the thorax progress like a wave from below upward, or the delay in the contraction of the intercostals may result in complete asynchronism. In the fully developed type of asynchronism the diaphragm reaches the expiratory phase before the contractions of the intercostals set in, and the abdomen and chest rise and fall alternately—"seesaw" best describes the impression conveyed.

The time relations of the contractions of the diaphragm and intercostal muscles with those of the auxiliary and associated muscles of respiration (for example, of the alae nasi) have not been determined in detail, but dilatation of the alae nasi has been observed to precede the bulging of the abdomen which, in turn, preceded the movement of the thorax.

The cause of the delay in the contractions of the intercostal (and other thoracic) muscles is not entirely clear, but it was suggested that it might be found in unequal depression of the bulbar (formatio reticularis) or other centers by the pneumococcus toxin.

The prognostic significance of the phenomenon is grave. The fully developed type of asynchronism (that is, complete dissociation of the contractions of the diaphragm and thoracic muscles) occurs only, at least in my experience, in severe and usually fatal cases of lobar pneumonia.

After the appearance of my paper, Hoover [2] observed three cases of pneumonia with abnormal respiratory movements and, concluding that they were examples of the type of breathing which I had described, attacked the accuracy of my observations and my interpretation of the cause of the phenomenon. He denied that the diaphragm and thoracic muscles contract asynchronously in this type of respiration.

All three of Dr. Hoover's cases exhibited a "seesaw" movement of the abdomen and thorax. Stating that the details of the respiratory movements in two of the cases were identical, he described one of them as follows (only the pertinent portions of the description are quoted):

> During inspiration the abdomen was violently protruded and the outer portions of the costal margins and the hypochondria moved so violently in a lateral direction that they suggested the flapping of the wings of a barnyard fowl. . . . During inspiration the lower end of the sternum was violently drawn toward the vertebrae, and the sternum, as far up as Louis' angle, shared in this movement. . . . During inspiration it was also observed that the ribs on both sides of the sternum, as far as the midclavicular line, were retracted. . . . It was perfectly clear that the ribs, from the second to the sixth, inclusive, were retracted during inspiration as far laterally as the midclavicular line: but when the arches of these ribs were examined laterally from this line, they were found to have a distinctly normal bucket-handle movement. It is not conceivable that the intercostal muscles were activated as far as to the midclavicular line and failed of activation in those parts which lay to the median side of that line. So the inspiratory retraction of the median portions of the upper ribs and sternum must have been due to the fact that in this region the normal results of the activating force of the intercostals were overcome by some conflicting agent.

A comparison of the movements of the thorax and abdomen portrayed in the respective descriptions will reveal obvious and fundamental differences in the two types of breathing. Even with respect to the "seesaw" movement, on which Dr. Hoover lays such stress, the resemblance is only superficial. The outstanding feature of the respiration in Dr. Hoover's cases is the disorder in the movements. The outer portions of the costal margins and the hypochondria "flapped like the wings of a barnyard fowl." The lower part of the thoracic cage was flattened during inspiration in its anteroposterior diameter. So marked was the flattening that, with the simultaneous protrusion of the abdominal wall, it produced the impression of "seesawing." The diaphragm and intercostal muscles contracted synchronously.

In the asynchronous type of breathing described in my paper, the only abnormal feature which appears is the delay in the movement of the thorax. The sternum and adjacent portions of the ribs are not depressed during inspiration; the direction of movement is always normal. The abdominal wall rises with inspiration and falls with expiration. The thorax in its entire extent expands during inspiration, and passively (usually) returns during expiration to its resting position: it is the delay in the expansion and return of the thorax to its resting position which creates the impression of "seesawing" when the dissociation of the abdominal and thoracic movements is complete.

In this connection, in order to prevent the wrong impressions which otherwise might be created, it is necessary to call attention to the fact that Dr. Hoover

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1. Coleman, Warren: Asynchronism of the Respiratory Movements in Lobar Pneumonia, J. A. M. A. 73: 1923 (Dec. 27) 1919.

2. Hoover, C. F.: Suspected Asynchronism of the Respiratory Movements in Lobar Pneumonia, J. A. M. A. 75: 990 (Oct. 9) 1920.

has fallen into the error of misquoting my paper in important particulars. Hughlings Jackson's case was not cited as an example of asynchronous breathing: the intercostal muscles did not contract at all unless the patient was roused by a command to breathe. And it was Jackson's opinion, not mine, that the cause of the respiratory disturbance in this case was a circumscribed myelitis of the lateral horns, if not more, of the cord, though I saw (and see) no reason for questioning the opinion. Generalizing from Jackson's opinion, Dr. Hoover attributes to me the belief that disease of the cord is the cause of asynchronous breathing, whereas I took particular pains to present my argument that its cause is probably to be found in unequal depression of the respiratory center (formatio reticularis) or centers by the pneumococcus toxin. I may add that the rarity of this type of breathing since the advent of the influenza pandemic, with the probable modification through symbiosis of the selective affinity of the pneumococcus toxin for the respiratory center, lends further support to my argument. But, after all, the main purpose of my paper was to call attention to an unrecognized type of respiration, not to explain its causation.

It had been my intention to publish tracings of the respiratory movements of patients with asynchronism in my original communication, but technical difficulties arose in obtaining them. Through the kindness of Prof. Holmes C. Jackson, these difficulties have since been overcome. Professor Jackson constructed special tambours which were large enough to take up the movements of the chest and abdominal wall: contact was established by means of long stems cemented to the rubber diaphragms. The large tambours were connected with smaller recording tambours by rubber tubing. Obviously, the movements of the chest and abdomen could be taken in only one diameter at a time. Attention should also be directed to the fact that the movements of the recording levers correspond in direction with those of the chest and abdomen.

In March last, an elderly woman died of primary carcinoma of the lungs in my service at Bellevue Hospital. When she first entered the ward she was thought, mistakenly, to have pneumonia. During inspiration the lower end of the sternum was observed to sink almost imperceptibly. By palpation it was ascertained that the intercostal muscles contracted simultaneously with the diaphragm. Gradually, as the patient grew weaker, the abnormal excursion of the lower end of the sternum increased: for some days before death, the "seesaw" movement of the abdomen and chest was visible at a distance through the bedclothing. Examination revealed that the anteroposterior diameter of the lower part of the thorax was shortened during inspiration as much as from one-third to one-half inch (8.5 to 12.7 mm.) by the depression of the sternum and adjacent portions of the ribs. The contractions of the lower intercostals were plainly visible; those of the upper intercostals could be detected by palpation: all were synchronous with the contraction of the diaphragm. The contractions of the intercostal muscles, however, were feeble, the feebleness progressively increasing from below upward. Further, the anterior portions of the intercostal muscles appeared not to contract; at least, their contractions could not be detected by inspection or palpation.

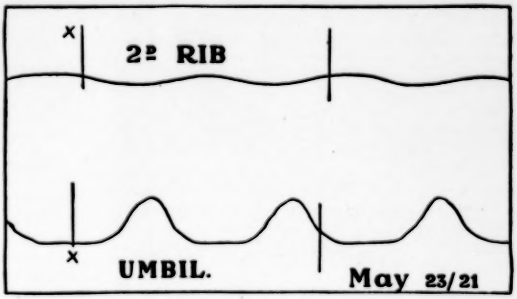


Fig. 2.—Tracings from a patient with lobar pneumonia exhibiting asynchronism in the movements of the thorax and abdomen. The curve from the sternum at the second rib does not begin to rise until the upward movement of the abdominal wall is nearly complete; the peak of the curve is not reached until the abdominal wall has returned to its resting position.

Tracings of the respiratory movements of this patient were taken on several occasions. Figure 1 represents the maximum departure from normal. The upper curve records the movements of the lower end of the sternum, the lower curve, that of the abdominal wall just above the umbilicus. Simultaneous points are indicated at *X*. The most striking feature of this tracing is the movement of the levers in opposite directions: the curve from the lower end of the sternum sinks during inspiration and rises with expiration, that from the abdomen rises during inspiration and falls with expiration. Measurements of the curves prove that the movements of the chest and abdomen begin and end simultaneously.

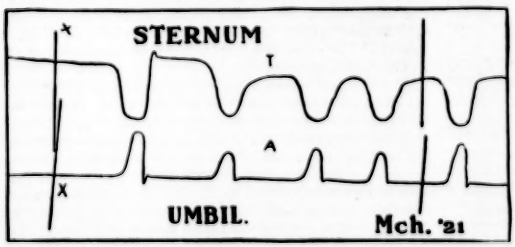


Fig. 1.—Tracings from the sternum and abdomen of a patient with primary carcinoma of the lungs. Simultaneous points are indicated at *X*. The curves show that the sternum sinks from its resting position as the abdomen rises.

The respiratory movements of this patient, therefore, as established by physical examination and by tracings, correspond in all essential particulars with the type of breathing described by Dr. Hoover. Acording to Dr. Hoover, this type of respiration "merely indicates moderate enlargement of the heart." In my patient, however, Dr. Douglas Symmers found the heart to be perfectly normal in size at necropsy.

As previously stated, the type of respiration described in my paper has been much less common since the

advent of the influenza pandemic. It did not develop in any patient with pneumonia in my service at Bellevue Hospital last year (September to May), or in that of my colleagues on the Third Medical Division. But in May a patient in the service of Dr. James F. Nagle exhibited the phenomenon. The dissociation of the contractions of the diaphragm and thoracic muscles was, however, not complete. The intercostal muscles, from and including the eighth downward, contracted synchronously with the diaphragm. There was a perceptible delay, however, in the contractions of the seventh pair of intercostals, and the contractions of the sixth, fifth, fourth, etc. pairs were successively delayed. In other words, the expansion of the thorax progressed as a wave from below upward.

The tracings in Figures 2 and 3 were taken from this patient. The upper curve in Figure 2 represents the movements of the sternum at the level of the second rib; the lower curve, the movement of the abdominal wall just above the umbilicus. The delay in the movement of the upper portion of the sternum is obvious. The curve does not begin to rise until near the completion of the upward movement of the abdominal wall; the peak of the curve is not reached until the abdominal wall has returned to its resting position. The tracings in Figure 3 were taken to show that the movements of the abdominal wall and xiphoid process were simultaneous. Both figures show that the sternum is not depressed during inspiration.

From the tracings and physical examination of this patient there can be no doubt that the diaphragm and intercostal muscles (from the eighth upward) contracted at different times. As stated above, this is not an example of complete asynchronism

CONCLUSIONS

1. Dr. Hoover failed in his attempt to identify the type of breathing to which I called attention. The type which he observed, and which formed the basis of his criticisms, differs from it in fundamental and obvious respects: the intercostal (and other thoracic) muscles

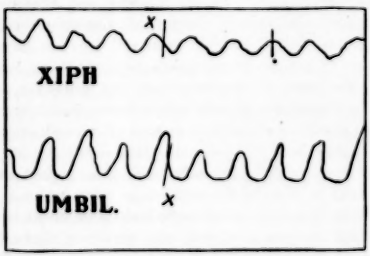


Fig. 3.—From the same patient, showing that the lower intercostal muscles and the diaphragm contract synchronously.

and diaphragm contract synchronously, the sternum is depressed during inspiration, and the "seesaw" movement which his patients exhibited was due to distortion of the thoracic cage instead of to delay in its normal expansion.

2. Asynchronism of the respiratory movements occurs in many severe cases of lobar pneumonia, as described in my original communication.

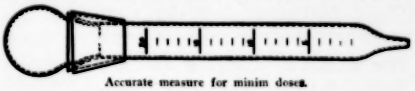
58 West Fifty-Fifth Street.

Clinical Notes, Suggestions, and New Instruments

AN ACCURATE MEASURE FOR MINIM DOSES OF DRUGS

R. E. CLOUD, M.D., ENSLEY, BIRMINGHAM, ALA.

To provide for the accurate administration of minim doses of drugs in the home is, at times, no small problem. At present our dependence is placed on the drop to measure volumes less than a dram, notwithstanding the fact that the former is a very uncertain quantity and consequently unreliable. As is well known, the drop varies in size, not only according to the



Accurate measure for minim doses.

nature of the liquid and the surface from which it falls, but also with temperature, rapidity of dropping and other factors.

In pediatric practice, especially, ability to measure small doses accurately is of great importance, partly on account of the greater delicacy of youthful patients and also to avoid gastro-intestinal disturbances, which frequently follow the giving of large amounts of syrupy and strongly alcoholic vehicles.

To dispose of this problem, I devised a dropper (illustrated herewith) so graduated that the dose, whether 1 or 20 minims, may be measured accurately. The instrument is manufactured by Becton, Dickinson & Co.

AN UNUSUAL CASE OF KIDNEY INFECTION

F. E. IRONS, M.D., WINTER HAVEN, FLA.

This case is of interest, chiefly, because of the remarkable duration of life after the kidneys ceased to function.

Mrs. R. S. B. was taken ill, July 25, 1921, with symptoms of pyelitis. She had had an attack of renal calculus followed by pyelitis in the summer of 1920, with apparent recovery. This second attack did not respond to the usual treatment of pyelitis, and symptoms of nephritis were soon added to those already present. In the beginning of the last month of illness, a marked diminution was observed in the amount of urine voided. The approximate amount voided from October 25 to October 31 was 16 ounces (473 c.c.); the amount voided from October 31 to November 4 was 3 ounces (89 c.c.) and the total quantity passed from November 4 to November 13 was only a few drops of mingled pus and urine—a fraction of a dram in all. Throughout this period of anuria the patient's bowels were very active, partly because of the use of laxative mineral waters. Until the last twelve hours preceding death, the patient was fairly comfortably physically; there were little general edema, practically no headache, and no nervous symptoms, and she was cheerful and alert mentally.

November 3 the systolic blood pressure was 140 mm., but it gradually rose until it reached 175, November 13, the last day of illness.

Twelve hours prior to death, pulmonary edema appeared, which was the immediate cause of death nine days after all renal function was suspended.

The Hospital an Agent in Public Service.—A hospital as an institutional unit in this great medical structure is obligated to learning and teaching, and in order to be worthy of the name must be solely an agent in public service. It may not be conducted primarily for gain, it must not pauperize, and all individuals connected with its activities, from the executive head to the least important employee, are but servants of the same agent in the same cause working under the same obligations to human welfare, the prevention and relief of disease, moral, mental and physical.—J. L. Yates, *Hosp. Progr.*, November, 1921, p. 417.

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SATURDAY, JANUARY 7, 1922

THE ELUSIVE FUNCTION OF THE SPLEEN

William Osler said that he always enjoyed reading an article concerning the function of the spleen which contradicted some previous article, since he himself had never been able to get a clear understanding of this organ. Any one with this point of view is assured of much pleasure whenever he looks up the most recent literature concerning the spleen.[1] He will find that many careful studies of the blood leaving the spleen show that the number of red cells is more than, less than or the same as the number in the blood going to the spleen, and that the leukocytes are increased, decreased or unchanged in number in the blood after passing through this organ. Presumably, then, if the spleen does produce any change in the number of cells in the blood passing through it, this is not of such a degree that it is outside the limits of error of observation. There is agreement that red cells are disintegrated in the spleen, but so they are in other organs, especially the liver and the bone marrow. Some investigators have found evidence that the spleen produces something which causes hemolysis, but others have described an increase in red cells and hemoglobin after the injection of splenic extracts.

Following splenectomy there is usually seen a marked and persistent leukocytosis, usually with more or less anemia of considerable duration; there seems to be general agreement on this point, but it is opposed to the fact that when the splenic blood is diverted into the systemic circulation the same sort of leukocytosis and anemia follows. Also it is accepted that with the anemia that follows splenectomy the red cells show an increased resistance to hemolysis, dependent perhaps on the presence in the blood of increased quantities of cholesterol, which protects the corpuscles from hemolytic agents. Despite this increase in cholesterol when the spleen is missing, we find the hypothesis put forward that the spleen is a place where blood cholesterol is manufactured.[2] Again, we find careful analyses of the blood after splenectomy showing an increased fat content, and equally trustworthy analyses showing no such thing.[3] At one time there was much interest in the reported transformation of ordinary lymph glands after splenectomy into a special, spleenlike type, hemolymph glands, but even such definite anatomic facts have not been agreed upon.[4] Some have advanced evidence that the spleen produces a hormone to stimulate peristalsis,[5] but not without contradiction, since extracts of almost any tissue may produce effects not differing from those of splenic extract.

Taken all together, an enormous amount of experimental work, as well as not a little careful clinical study, has failed to show conclusively that the spleen is an organ of internal secretion, or to account in any way for the fact that it is a large organ, universally distributed in the animal kingdom, provided with a blood supply so large as to suggest that it must have great activity and most important functions. Whatever it does in the way of destroying decrepit red cells can be done elsewhere. Surely it must have some further task than this, yet, if it has, this must be readily carried on in other tissues, since splenectomy is so well endured; probably this is why we cannot find out just what the chief function of the spleen may be.

1. Eddy, N. B.: The Internal Secretion of the Spleen, Endocrinology **5**: 461 (July) 1921.
2. Abelous, J. E., and Soula, L. C.: Compt. rend. Soc. de biol. **170**: 619, 1920.
3. Denis, W.: The Influence of Splenectomy on Metabolism in Anemia, Arch. Int. Med. **20**: 79 (July) 1917.
4. Meyer, A. W.: J. Exper. Zool. **16**: 241, 1914.
5. Stern, L., and Rothlin, E.: J. de physiol. et de path. gén. **18**: 753, 1920.

THE MECHANISM OF ACID NEUTRALIZATION BY AMMONIA IN THE BODY

It is now generally accepted that the greater part, at least, of the urea which represents the end-product of nitrogenous metabolism in the body can be traced to ammonia as its immediate precursor. Ammonia is undoubtedly formed with chemical readiness from the amino-acids that represent protein in the process of disintegration, whereupon it is synthesized into urea ready for transport to the kidneys and excretion. Ordinarily the urinary output of ammonium compounds, as such, is small at most and does not exceed 0.6 gm. (9 grains) of nitrogen a day. At times, however, the yield of ammonia from the urine may be largely augmented, notably in that form of acid intoxication produced either by ingestion of mineral acid or by the genesis of acid products as the result of a disordered metabolism. In such cases it is argued that ammonia arising in the usual way from amino-acid deaminization somewhere in the body is deflected from its usual conversion to urea and serves to neutralize some of the abnormal acid products. Ammonia thus performs a protective function and serves among other processes in the important reactions of neutrality regulation in the body. Consequently, further, an increment of ammonia output by the kidneys is interpreted as an index of that form of acidosis represented by increased circulation of fixed acids. Administration of

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fixed alkalis accordingly always depresses the output of ammonia, as they replace the latter in the neutralization process.

Where is the ammonia formed which plays such an important part? Where does the neutralization take place? Heretofore the liver, an organ which has long been saddled with responsibility for physiologic reactions that could not be assigned to any other seat in the body, has been charged with the function of converting or diverting ammonia into its appropriate uses. This view has been cherished by a generation of physiologists and fostered by the intimation that the portal circulation brings to the liver blood particularly rich in ammonia. In a critical and unusually meritorious contribution to the literature of this subject, Nash and Benedict[1] of the Cornell University Medical College, New York City, have shown that many of the statements regarding the content of ammonia in the blood must be discarded, owing to the inaccuracies of earlier analytic technic. There has even been some question as to whether any ammonia actually exists in the blood.[2] In any event, it has become clear that the actual concentration of blood ammonia as determined by well controlled methods is entirely inadequate to account for the high urinary ammonia found in various pathologic conditions or after acid ingestion. One naturally asks, therefore, whether the kidney itself forms the ammonia which it eliminates.

To this scarcely anticipated question the experiments of Nash and Benedict seem to have given a conclusive answer in the affirmative. They found no noteworthy increment in the ammonia content of the blood in the general circulation even in conditions in which the urinary output of ammonia was markedly augmented; nor was there any accumulation when the kidney function was seriously interfered with, although the content of other nitrogenous excretory products was decidedly increased in the blood in such cases of renal insufficiency. It seemed probable that if ammonia production takes place in the kidney, this organ would not excrete every trace of the ammonia formed, and one might then expect to find the blood of the renal vein richer in ammonia than the systemic blood. This was, indeed, the case. As the New York biochemists concluded on finding twice as much ammonia in the blood from the renal vein as from other sources, these differences admit of only one interpretation: that the kidney, instead of excreting ammonia from the blood, forms the ammonia which it excretes, while at the same time it contributes a small amount of ammonia to the blood. Furthermore, if ammonia were formed in the organism in appreciable amounts elsewhere than in the kidney, one would expect injection of acid into the circulation to be followed by a definite increase in the ammonia of the general systemic blood. The opposite change might be expected as a result of alkali treatment. Yet no such changes were actually demonstrable when the crucial experimental test was made.

If these significant findings are substantiated, the commonly accepted view that neutralization of acids by ammonia is a function of the organism in general, or of the liver, must be definitely abandoned. As Nash and Benedict point out, if the kidney is to be regarded as the seat of the ammonia production, depletion of the alkali reserve becomes readily understandable under certain definite conditions. If ammonia is not available within the organism, the acids must be transported wholly in combination with the fixed bases, or with protein. If, as they state further, the kidney becomes defective in its power to eliminate acid radicals, and thus to maintain them at a minimum level in the blood, a depletion of the alkali reserve would result, since the acid radicals would remain in the circulation in abnormal amounts, and would have to be neutralized by the fixed bases or protein. This condition might well result with a kidney still normal in its power of ammonia production. Such ammonia is available for the needs of the organism only as acid radicals are excreted. A depletion of the alkali reserve of the blood would result should the kidney become defective in its power of ammonia formation. Even should such a kidney remain normal in its power of excreting acid radicals, the organism would lose base excessively during the excretion of the acid. These splendidly executed investigations invite novel speculations as to the significance of kidney disease and its relation to acidosis.

1. Nash, T. P., Jr., and Benedict, S. R.: The Ammonia Content of the Blood, and Its Bearing on the Mechanism of Acid Neutralization in the Animal Organism, J. Biol. Chem. 48:463 (Oct.) 1921.
2. Myers, V. C.: Practical Chemical Analysis of Blood, New York, 1921, p. 25.

DEATHS OF PHYSICIANS IN 1921

During 1921, the deaths of 2,286 physicians in the United States and Canada were recorded in THE JOURNAL. Adding 2.5 per cent. to this number on account of delayed reports and possible omissions, we may estimate the total number of deaths as 2,343. On an estimate of 160,000 physicians in the United States and Canada, this is equivalent to an annual death rate of 14.65 per thousand. The average annual mortality rate for the period from 1902 to 1921, inclusive, is 15.05.

Ages.—Of the 2,118 decedents whose age was stated, 29 were under 30; 160 between 31 and 40; 298 between 41 and 50; 409 between 51 and 60; 571 between 61 and 70; 393 between 71 and 80; 240 between 81 and 90; 17 between 91 and 100, and one lived to the age of 101. The greatest number of deaths for a given age occurred at 66 years, at which age seventy-one deaths were noted.

Causes of Death.—Of the 2,009 known causes of death, 426 were from diseases of the heart and circulatory system. General diseases accounted for 290 deaths. Of these, 128 were from carcinoma and sar

coma, 47 from tuberculosis, 29 from septicemia, 24 from diabetes, 15 from typhoid fever, 14 from anemia, 8 from diphtheria, and 25 from other infectious diseases. Cerebral hemorrhage caused 196 deaths; paresis, 37; meningitis, 18; neuritis, 14; epidemic encephalitis, 11, and other diseases of the nervous system, 8. Pneumonia claimed 167 victims; influenza, 19; bronchitis, 11, and other diseases of the respiratory system, 11. Appendicitis caused 32 deaths; cirrhosis of the liver, 19; gallstones, 17; strangulated hernia, 13; peritonitis, 12, and other diseases of the digestive system, 79 deaths. Chronic nephritis accounted for 79; acute nephritis, 26; uremia, 23, and other diseases of the genito-urinary system, 18 deaths. Various diseases of the bones caused 9 deaths; diseases of the skin, 3; senility, 213; sequels to operations, 91, and 38 were due to complications not specified.

Accident and Homicide.—The causes and distribution of the ninety-seven deaths from accident were: automobile-railway (grade crossing), 22; automobile, 19; firearms, 17; railroad and street cars, 14; drowning, 6; poison, burns, falls and fractured skulls, each, 4; runaway team, kick by a horse, and electrocution by roentgen ray while treating patient, each, 1. All of the nineteen homicides were due to firearms; of these, six physicians were shot by bandits and one (colored) shot in a race riot. One physician was electrocuted on conviction of the murder of his wife.

Suicide.—The sixty-nine physicians who ended their lives by suicide selected these methods: poison, 29; firearms, 19; jumping from high places, 7; cutting instruments, 5; drowning, 4; asphyxiation, 3; strangulation, 2.

Civil Positions.—Among the decedents who held civil positions, 1 had been lieutenant governor (acting state governor for one year); 39, members of the state legislature; 34, mayors of cities; 35, members of boards of health; 15, members of state boards of medical examiners; 19, members of U. S. pension boards; 4, postmasters, and 1, a member of the Canadian parliament.

THE EXPERIMENTAL INVESTIGATION OF SENESCENCE

Newer methods of investigation permit the problem of senescence to be attacked under the controlled conditions of experiment, and many principles of importance have been disclosed. Bechhold [1] has pointed out the interesting way in which the living body, a colloidal mass, behaves in respect to age exactly like a simple colloidal jelly. It is characteristic of colloidal solutions, which, of course, is what cells are, that as they age their properties continually change in the direction of aggregation of the colloidal particles. As a result of this the gels tend to decrease in elasticity, to become more turbid and less permeable. A gelatin mass possesses its maximum elasticity a few hours after it is formed; later it begins to shrink and force out its water, becoming drier and less rapidly permeated by crystalloids in solution. This is entirely comparable to the fact that young tissues are much more elastic than old tissues, that chemical changes seem to take place more rapidly in youthful cells, and that the water content of the tissues continues to decrease progressively with age, for the fetus of the third month is 94 per cent. water, at birth about 70 per cent., and the adult is only about 58 per cent. Bechhold says that in general the tissue colloids decrease in their water affinity both in animal organisms, which become poorer in water with age, and in plants as shown by the hardening of older plant tissues. The bearing of these principles on the problem of senility and degeneration of elastic tissue, regeneration, and other problems of pathology, is obvious.

Carrel has found that when connective tissue is grown by the usual methods of tissue cultivation, it will develop more abundantly in the plasma of young animals than in that from older animals, and with Ebeling [2] he has sought the cause of this difference and its relation to the factors of senescence. They call attention to the fact that something similar must obtain in man, since if the rate of cicatrization of human wounds is measured accurately, this is found to vary inversely with the age of the patient. Studies by Loeb and Northrup on the duration of life of the fruit fly *Drosophila* led to the conclusion that this was probably determined either by the production of some substance leading to old age, or by the destruction of a substance which normally prevents old age and natural death. The experimental studies of Carrel and Ebeling indicate that the slower growth of cells in cultures of serum from older animals is dependent on the increase of an inhibiting factor in the serum with age. The effect of age is marked, the rate of growth of connective tissue cells in chicken plasma decreasing 50 per cent. with the first three years of life and 30 per cent. more in the next six years of the life of the fowls furnishing the plasma. The duration of life of cells in the older plasma was correspondingly decreased. No evidence was found of the presence of any growth-accelerating substance in the plasma of young fowls.

These suggestive studies indicate that the decreased rate of multiplication of cells in old animals is at least in part the result of influences outside the cells themselves, of unknown nature. The relative capacity of cells derived from animals of different ages to grow in the same serum is not discussed, but it would in all probability show equally significant facts, especially in consideration of the differences in young and old protoplasm pointed out previously. Such experimental investigations of cell growth are of great significance not only for the problems of tissue regeneration and senescence, but also in the study of cancer, since here

1. Bechhold, H.: Die Kolloide in Biologie und Medizin, Dresden, 1912, p. 65.

2. Carrel, Alexis, and Ebeling, A. H.: Age and Multiplication of Fibroblasts, J. Exper. Med. 34:599, 1921.

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we have an instance of excessive growth which is especially likely to appear at the time when senescence is manifesting itself.

Current Comment

THE CONSEQUENCES OF BLOOD CONCENTRATION

The unexpectedly frequent occurrence of abnormal concentration of the blood and the untoward consequences of anhydremia for the bodily functions have attained notice in a variety of ways during recent months. Marriott and his collaborators [1] have pointed out what undue desiccation of the blood may mean in those abnormal conditions designated as infantile marasmus or athrepsia in children. The oxygen-carrying power of the blood is diminished, the structures supplied by the less vigorously circulating fluid feel the effect of imperfect arterialization, and organs like the kidney consequently suffer in their secretory functions. Underhill [2] has shown that blood concentration is immediately responsible for death in gassed animals, and presumably in man under comparable conditions in which pulmonary edema brings about a distinct concentration of the blood. The latter then means a failing circulation, an inefficient oxygen carrier, oxygen starvation of the tissues, fall of temperature and, finally, suspension of vital activities. Underhill and Ringer [3] have observed that a similar concentration of the blood may arise in patients with influenza, and may constitute a factor of dominant importance with respect to the outcome of the disease. The decreased content of water in the blood exhibits itself in relation to the digestive secretions. That a condition of anhydremia may arise in febrile conditions seems to be well established.[4] It is significant, therefore, to recall that Meyer, Cohen and Carlson [5] observed a reduction in the total quantity of the gastric secretion in human febrile patients. Finally, Barbour and Freedman [6] have observed a similar reduction in the response of the salivary glands to stimulation in animals during the course of fever when there was known to be an abnormally high concentration, i. e., a diminished water content of the blood. The depression of secretion now well demonstrated to occur in fever has been attributed by some to degenerative changes assumed to arise in the secretory structures. Barbour has pointed out, however, that the paucity of secretion can be accounted for equally well by the lack of available water in the circulation. The therapy of restoring water by reestablishing the normal concentration of the blood in the conditions of anhydremia now known to be not infrequent under a variety of clinical conditions deserves more careful consideration than it at present commonly receives.

1. Diarrhea and Anhydremia in Infancy, editorial, J. A. M. A. **76**: 794 (March 19) 1921.
2. Underhill, F. P.: The Physiology and Experimental Treatment of Poisoning with Lethal War Gases, Arch. Int. Med. **23**: 753 (June) 1919.
3. Underhill, F. P., and Ringer, Michael: Blood Concentration Changes in Influenza, with Suggestions for Treatment, J. A. M. A. **75**: 1531 (Dec. 4) 1920.
4. Barbour and Howard: Proc. Soc. Exper. Biol. & Med. **17**: 148, 1920.
5. Meyer, J.; Cohen, S. J., and Carlson, A. J.: Gastric Secretion and Fever, Arch. Int. Med. **21**: 354 (March) 1918.
6. Barbour, H. G., and Freedman, B. P.: Effects of Pilocarpine upon Salivary Secretion in Normal and Febrile Dogs, Am. J. Physiol. **57**: 387 (Oct.) 1921.

THE EXCRETION OF ACETONE

Living cells are more or less continuously giving off to the mediums surrounding them products of chemical reactions which take place in the course of their physiologic activity. Some of these products find their way into the circulating blood, from which in turn they are eliminated through various channels. For many years the nature of the processes by which such transfers from cells to fluids and vice versa may take place has been the subject of discussion. Simple filtration is in many instances a physical impossibility under the conditions known to prevail; consequently, it must be assumed that other forces are concerned. Whether these are of an easily explainable physicochemical character, such as osmosis represents, or whether they involve some as yet obscure feature which was formerly defined by the indefinite term "physiologic" is not yet clear in certain instances. Even in the case of a function as simple as the exchange of gases through the lungs seems to be, vague "secretory" factors have been called on to explain the penetration of oxygen into the body at the low partial pressures observed at high altitudes. In the case of the elimination of acetone, which arises under pathologic conditions in the body, recent investigations by Widmark [1] and independently by Briggs and Shaffer [2] at the Washington University School of Medicine have shown that it is excreted from the lungs by the simple process of diffusion and volatilization. Examinations of the coefficients of distribution of acetone between water and air, and blood and air outside the body at different temperatures have shown them to be the same as the ratio between the concentration of acetone in blood and alveolar air under conditions of ketonemia. Furthermore, the concentration of acetone in the urine in such cases is about the same as that in the whole blood and blood plasma. Hence the excretion of acetone, whether by the lungs or the kidneys, appears to be the result of the simple physical process of diffusion. The "acetone breath" of the diabetic patient thus is the result merely of evaporation, so to speak, from the blood plasma into the alveolar air.

1. Widmark, E. M. P.: Biochem. J. **14**: 379, 1920.
2. Briggs, A. P., and Shaffer, P. A.: The Excretion of Acetone from the Lungs, J. Biol. Chem. **48**: 413 (Oct.) 1921.
3. J. A. M. A. **77**: 1742 (Nov. 26) 1921.

Association News

APPOINTMENT OF COMMITTEE ON GORGAS MEMORIAL

Dr. Hubert Work, President of the American Medical Association, has appointed as the Committee on the Gorgas Memorial, Drs. George E. de Schweinitz, Philadelphia; Charles W. Richardson, Washington, D. C, and Fred B. Lund, Boston. This appointment was made in compliance with the request received by the Board of Trustees from the Gorgas Memorial Institute of Tropical and Preventive Medicine of Panama for the cooperation of the American Medical Association.[3]

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Hospital News.—Dr. Rex. F. Swartz, Seattle, has been appointed physician in charge of the new hospital of the U. S. Bureau of Education at Noorvik. The hospital serves all that territory of Alaska which borders on the Arctic Ocean.

DELAWARE

New Building at University of Delaware.—The government has erected, at a cost of $10,000, a new building to house the division of rehabilitation of the University of Delaware.

FLORIDA

Radium Clinic.—According to an announcement by Dr. Raymond C. Turck, state health officer, the state radium clinic for the treatment of cancer, which was established at Jacksonville about a year ago, by Dr. Ralph N. Greene, former state health officer, and Dr. Gerry R. Holden, Jacksonville, for the treatment of cases of inoperable cancer in women, will hereafter be open to both men and women suffering from any form of cancer which may be benefited by radium. The conditions under which treatments are given are that the patient must be a resident of the state and must be financially unable to pay for the medical services which he may require.

ILLINOIS

Personal.—Dr. Anna C. Johnson, Chicago Municipal Tuberculosis Service, has been appointed medical director of the Champaign County Tuberculosis Sanatorium.

Medical Society Assumes Duties of City Physician.—The members of the Kankakee City Medical Society, since March, 1921, have been rendering the service in that locality usually performed by the county and the township physician. Recently, the society has taken over the duties of the city physician. To render this service, the members of the society are divided into four groups, each of which serves during three months. In each of these groups are physicians who are capable of doing major surgery, as well as specialists on the eye, ear, nose and throat. The plan provides that the indigent shall have a choice of physicians and be accorded more competent service than could be rendered by an individual practitioner, and at no greater expense to the community. The compensation which the society receives for this work is devoted to maintaining headquarters for the organization and a library, and any surplus which may accrue will be used to provide greater facilities and equipment for all the physicians who are members of the organization.

INDIANA

Hospital News.—St. Elizabeth's Hospital, LaFayette, is building a new 170-foot fireproof addition to the hospital. A separate isolation department for certain contagious diseases and a large normal training school for teachers and nurses are also under construction on the hospital grounds.

IOWA

Personal.—Dr. Ray Wycoff, Wapello, sailed for Porto Rico, January 7, to take charge of the Ryder Memorial Hospital.

MARYLAND

Health Exhibit for Baltimore City Planned.—To keep the public in closer touch with the work of the Baltimore City Health Department, Commissioner C. Hampson Jones is planning a permanent exhibit in a building adjoining the health department. The proposed exhibit will be a feature of an assembly hall, in which employees of the different bureaus of the health department are to hold monthly gatherings for consultation and a systematic study of the problems confronting them. Bureau chiefs will lead discussions as to the best means of improving the service, based on first-hand reports of what health departments in other large cities are doing to meet their problems. The information will be gathered by the bureau chiefs direct, and will enable Dr. Jones to bring the service to a higher standard of efficiency. The exhibit will be of such a character as to make it possible for the public to keep posted as to every branch of health work in the city. It will be an educational exhibit, not the least part of which will be a comprehensive record of the work of the Child Welfare Bureau, in charge of Dr. Mary Sherwood, which deals with the care of infants as well as prenatal work. The exhibit and monthly conferences constitute but one feature of a modernized health department, which the department has been trying to organize in Baltimore for many years.

MICHIGAN

Dr. Coller Acquitted.—It is reported that Dr. Frank S. Coller, president of the village of Vicksburg, who was arrested, June 20, on a charge of killing Robert Thompson, was acquitted in the circuit court of Kalamazoo, December 15. Dr. Coller was called to treat a member of the Thompson family who had fainted during a family quarrel, and becoming involved in the fight, Dr. Coller was struck by Thompson, whom it was alleged he shot. Dr. Coller pleaded self-defense, declaring that he fired at Thompson only after the latter had attacked him.

MISSOURI

Hodgen Lecture.—Dr. Samuel J. Mixter, Boston, delivered the Hodgen Lecture, under the auspices of the St. Louis Surgical Society and the Medical Fund Society, Jan. 4, 1922.

Lectures in Ophthalmology.—The Ophthalmic Section of the St. Louis Medical Society announces a course of lectures in ophthalmology, to be given in St. Louis by Prof. Ernst Fuchs of Vienna during the month of February, 1922. Further information regarding this course may be obtained by writing to the Fuchs Lecture Committee, St. Louis Medical Society, 3525 Pine Street, St. Louis.

Rescinding of Travel Order.—According to a statement of Dr. J. P. Peake, U. S. Public Health Service, Washington, D. C., who was sent to Kansas City to investigate the smallpox epidemic, the disease is steadily declining. The state board of health has rescinded its order requiring all persons traveling on railroads in the state, on and after December 22, to present a certificate of vaccination against smallpox.

Census of St. Louis' Crippled Children.—The St. Louis Medical Society is taking the census of the crippled children of that city. The society will endeavor to assist these little unfortunates, who are not already under treatment and who cannot secure it for themselves, to receive the benefit which can be had in the hospitals of the city. Through the public press an invitation has been issued to parents and others who know of cases of this character, asking them to report to the society the names of these patients. The society proposes to follow up these patients until everything has been done for them that may be done.

NEBRASKA

Lancaster County Medical Society.—At the regular meeting of the society held, December 17, at Lincoln, resolutions were passed expressing appreciation of the $100,000 bequest for the city hospital, by the late Mr. R. E. Moore. The following officers were elected for the ensuing year: president, Dr. George W. Covey; vice president, Dr. Joseph J. Hompes; secretary, Dr. David D. Sanderson, and treasurer, Dr. George H. Walker.

NEW JERSEY

Hospital News.—Establishment of four or five convalescent hospitals in various parts of the state was definitely decided by the executive committee of the New Jersey Department of the American Legion. These institutions will be conducted under officials of the state department.

NEW YORK

Health Officer Honored.—The staff of the health bureau, Rochester, gave a complimentary dinner to Dr. George W. Goler, on the completion of his twenty-five years of active service as health officer of the city of Rochester.

Typhoid Law Suits to Be Heard.—The first of a series of suits against the Gould Manufacturing Company and the Seneca Water Company growing out of the recent typhoid fever epidemic at Seneca Falls is scheduled for January 10 in the supreme court at Rochester. The complainant is K. H. Bartlett of Seneca Falls.

State License for Dr. Lorenz.—By unanimous vote of the board of regents of the state of New York, Dr. Adolph Lorenz of Vienna, has been granted a license to practice medicine in this state. Dr. Lorenz certified to the board that he had licenses issued by the Austrian government, and during his former visit to this country by the states of Illinois and Texas.

Tuberculosis Hospital for Soldier Memorial.—A supervisor's committee, appointed to investigate regarding a suitable memorial for the soldiers of Madison County, has submitted a report recommending a tuberculosis hospital as a memorial, the land for a site, buildings and plant to be provided through a public subscription. The hospital would be maintained at county expense under the provisions of the state county law.

Personal.—The governor has announced the appointment of Dr. C. Floyd Haviland, Albany, who is a present superintendent of the Connecticut State Hospital, Middletown, Conn., as state hospital commissioner of New York, to fill the vacancy caused by the resignation of Dr. Charles W. Pilgrim. ——Dr. Francis E. Fronczak, health commissioner of Buffalo, has received the Order of the Legion of Honor from the French government. Dr. Fronczak served with the American forces in France and was a confrère of Paderewski in the early days of the present government of Poland.

Medical Society of the County of Kings.—With the object of promoting cooperation between the Medical Society of the County of Kings and the Second District Dental Society, a recent joint meeting of the two bodies was held in Brooklyn, December 20. The principal paper, which had to do with the relations and duties of both physician and dentists, was given by Dr. Leroy M. S. Miner, Boston, on "Oral Focal Infection in Relation to Systemic Disease and the Duties of Physicians and Dentists Thereto and to Each Other." It was the one hundred and first annual meeting of the society. The following officers were elected for the ensuing year: Dr. Arthur H. Bogart, president; Dr. Frank D. Jennings, vice president; Dr. Lewis P. Addoms, secretary, and Dr. Robert L. Moorhead, treasurer.

New York City

Personal.—A severe fire occurred in the home of Dr. Wendell Phillips during the night of December 22, causing considerable damage to the household effects. The fire was not discovered until after it had made considerable headway. Dr. Phillips and family had a narrow escape.

Harvey Society Lecture.—Dr. Allen K. Krause, associate professor of medicine, Johns Hopkins University, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, Jan. 21, 1922. His subject will be "Experimental Studies on Tuberculous Infection."

Periodic Examination of Health Department Employees.—The New York City Health Department, which was one of the pioneers in the physical examination of employees, having made provision for such examinations in 1914, in its *Monthly Bulletin* for November, reports the results of physical examination of its employees in 1920. The records for 1920 show that a total of 8,512 examinations were made; of these, 2,297 were men and 6,215 were women. In 1915, a total of 2,840 examinations were recorded. In 1920, 24.9 per cent. of the men and 71.91 per cent. of the women employees were examined. These examinations have served to bring out many interesting facts. One of the outstanding advantages is that these physical examinations afford excellent opportunities for educational work on preventive medicine. Another feature that stands out prominently in this group, as in other similar groups subjected to physical examination, is the surprisingly large number of those who think themselves perfectly well who need hygienic advice and instruction.

OHIO

New Officers for Academy of Medicine.—At the annual meeting of the Academy of Medicine of Cleveland, held, December 16, Dr. John Phillips became president for the year 1922 and Dr. Clyde L. Cummer, president-elect. Dr. Charles W. Stone was made vice president, and Mr. Guy M. Wells was reappointed executive secretary.

Cincinnati Academy of Medicine.—Dr. Hugh Hampton Young, clinical professor of urology, Johns Hopkins University, Baltimore, will address the academy, January 9, and Colonel Gilchrist, chemical warfare department, U. S. Army, will speak on "Medical Aspects of War Gas," January 10. In connection with the visit of Colonel Gilchrist, clinics will be conducted on poison gas cases.

PENNSYLVANIA

Philadelphia

Chicken Pox Cases Closely Watched.—One hundred and forty-two cases of chicken pox in Philadelphia in one week are reported by the department of public health. The report states that attention is especially called to chicken pox at this time because its eruptive symptoms may simulate those of smallpox, which disease is reported on the increase in the Western states.

TENNESSEE

Personal.—Major Wibb E. Cooper, M. C., U. S. Army, Fort Bliss, Texas, is detailed as assistant professor at Vanderbilt University, Nashville.

TEXAS

Hospital News.—The Physicians' and Surgeons' Hospital, Dallas, was recently completely destroyed by fire. The loss is estimated at $30,000, with $20,000 insurance.

WASHINGTON

Convalescent Home in Seattle.—A convalescent home for disabled veterans of the World War will be established at Seattle. Outpatients, beneficiaries of the government who have been discharged from hospitals, but who still receive medical aid and compensation, will be the occupants of the home, which is planned to accommodate fifty patients.

CANADA

Personal.—Dr. John Wilson Taylor, of the University of Manitoba, on his way to the meeting of the American Philological Association, at Ann Arbor, Mich., spent Christmas with his parents in Toronto.

New Hospital for Dalhousie University.—A new tuberculosis hospital has recently been opened in Halifax which will care for about sixty-five patients. Through an agreement, Dalhousie University will nominate the medical staff, with the understanding that the institution will be a portion of the teaching plant for the Dalhousie University Faculty of Medicine.

Public Health News.—The Medical Society of Belleville, Ont., has brought to the attention of the board of health the urgent need for an isolation hospital there. The board has not yet made any recommendation to the city council, but it is expected that the council for 1922 will take some action in the matter. The old isolation hospital was demolished some years ago.——Messrs. George and H. S. McLaughlin, Oshawa, Ont., have presented to the city of Oshawa, through Dr. Thomas W. G. MacKay, medical officer of health, a check for the sum of $1,200, for the establishment of a public health laboratory there.——At the coming municipal elections at St. Marys, Ont., a plebiscite will be taken to authorize the employment of a public health nurse. A community nurse was engaged by the 1921 council for six months, pending a plebiscite.

GENERAL

The Remittance Slip.—The blue remittance slip which reappears in this week's issue of THE JOURNAL is for the convenience of those who have not yet sent in their subscription and fellowship dues. The splendid cooperation of those who have already remitted is greatly appreciated, and it is hoped that the insertion of this second slip will practically obviate the necessity of sending individual bills. Those who desire to subscribe to any of the special journals issued by the Association or to the "Quarterly Cumulative Index to Current Medical Literature" may find it convenient to write names of these publications in the blank space on the blue slip and remit for them along with fellowship dues and "Journal A. M. A." subscription.

Personal.—Dr. Karl Landsteiner, formerly of Vienna and now of the Hague, has been appointed on the scientific staff of the Rockefeller Institute for Medical Research, New York City.

New Publication of the American Red Cross.—Early in January the American Red Cross will begin publication of the *Red Cross Courier*, a weekly newspaper of national circulation, which will be the official organ of the association. This publication will take the place of all bulletins now published at national and division headquarters.

Questionable Osteopathic Degrees.—Trustworthy information states that an individual calling himself Dr. H. D. Landale, of Calcutta, is having printed in Melbourne, Australia, blank forms of a diploma purported to be issued by an International Osteopathic Medical College of New York. It appears that there is no such institution.

The de Roaldes Prize.—The American Laryngological Association has offered the de Roaldes prize—a gold medal, valued at $150—for the best original thesis upon a subject pertaining to laryngology or rhinology. The competition is open to nonmembers of the association. The thesis must be in the hands of the chairman of the prize committee prior to April 1, 1922.

Bequests and Donations.—The following bequests and donations have recently been announced:

University Hospital and the Home for the Blind, Philadelphia, will receive the income, in equal parts, from one half of the residue of the $65,000 estate left by Mrs. Alice M. Hirst.

Hahnemann Hospital, Philadelphia. The will of Ernest L. Tustin directs that after certain small bequests to servants, the residuary estate valued at $300,000 be held in trust for a sister and the widow, and at their death one fourth will go to the Hahnemann Hospital to maintain two beds for the benefit for poor and destitute children, in the name of Ernest L. Tustin and his wife.

New Memorial Hospital, Concord, N. H., $500 by the will of Mrs. Pauline L. Evans.

Hepburn Hospital, Ogdensburg, N. Y., an endowment fund of $500 by A. Barton Hepburn.

Plea for Relief of Russian Physicians.—The American Relief Administration has issued an appeal for the relief of Russian physicians in the famine area where their help is so badly needed. The starving condition of physicians, it is stated, is seriously interfering with the vitally important medical program drawn up by the American Relief Administration officials for the benefit of the hunger-stricken population. Cholera, typhus, malaria, dysentery and other diseases, consequent on malnutrition, are rampant all through the Volga River basin, where 30,000,000 people are in acute need, if not in danger due to the failure of last summer's crop. An absolute dearth of medical supplies at first hampered the work of the American Relief Administration, but a grant of $3,000,000 in cash from the American Red Cross for the purchase of stocks, as well as a further gift of $700,000 worth of surplus material, eliminated this difficulty. Now the call is for personnel, which Russia herself can supply, if only food enough can be found to keep the workers themselves fit.

Fatalities in Coal Mines.—The U. S. Bureau of Mines reports 146 men killed in and about the coal mines of the United States in November, 1921. The figures represent a decrease of about 51 fatalities, or about 26 per cent., as compared with November, 1920, in which month 197 men were killed at coal mines. Based on an estimated output of 42,814,000 short tons in November, 1921, the fatality rate is 3.41 per million tons produced. The corresponding rate for November, 1920, was 3.34 and the production of coal was 58,898,000 tons. The production of coal during November, 1921, represents a decrease of 27 per cent. During the first eleven months of the present year 1,794 men had been killed by accidents at coal mines, against 2,077 killed during the corresponding months of 1920, a decrease of 283 fatalities, or 14 per cent. The output of coal for the same months was 457,259,000 short tons, in 1921, and 584,641,000 tons, in 1920, a decrease during the present year of 127,382,000, or 22 per cent. These figures represent a fatality rate of 3.92 per million tons, in 1921, and 3.55 per million tons mined in 1920.

National Rehabilitation Conference.—A conference was held, December 29-31, in the government offices of the U. S. Veterans' Bureau, Washington, D. C. All district managers were advised and urged to arouse public interest and to send interesting achievements of rehabilitation, such as individual graphic stories and pictures, samples of handwork and samples of work of trainees who are blind, deaf, tuberculous, etc., for the work of the conference. The program dealt with the following subjects: 1. Economic and social value of rehabilitation. 2. The training problem: (*a*) The vocational handicap in relation to the individual training program; (*b*) Is a time schedule for various courses desirable? (*c*) Should rehabilitation be extended or restricted. 3. Illiteracy among disabled ex-service persons and its relation to rehabilitation. 4. The need for national training centers, such as that opened at Camp Sherman. 5. Placement training; its method and evaluation. 6. Land settlement for trainees through government action. 7. Should the concept of rehabilitation be large or small? The conference will also discuss the value of visual education in the program of rehabilitation.

Reorganization of Public Health Activities of the Philippines.—The International Health Board of the Rockefeller Foundation has accepted an invitation to cooperate in carrying out the general scheme of reorganization of the public health activities of the Philippine Islands. This cooperation will consist in supplying certain members of its staff and providing specialists in various lines of public health work. The program adopted by the government includes the ultimate consolidation of all health functions in a single department. As one important part of the plan, an assistant will be provided for the director of the bureau of science, who will be expected to advise in the further development of that bureau, which has already made notable contributions to various scientific problems. The biologic laboratory, which is one department of the bureau of science, is to be expanded in order to serve as the central public health laboratory of the Philippines, with local laboratories in the provinces. Dr. Victor G. Heiser, director for the East of the International Health Board, and formerly director of health for the Philippine Islands, who is now in New York, will go to Manila, in February, to assist in carrying out the program.

Occupational Therapy and Prevocational Training.—The director of the U. S. Veterans' Bureau has approved a plan for occupational therapy and prevocational training in hospitals. To execute the plan, it will be necessary to provide (1) personnel; (2) equipment; (3) expendable material; (4) suitable space. An estimate of the personnel required increases the present force by 200, classified as follows: Trade and industrial teachers, fifty; commercial or academic teachers, fifty; occupational aides, 100. According to the general outline of the policy, one teacher will be required for every twenty men at work or for every forty men in the hospital, exclusive of the administrative force, as it is estimated that only 50 per cent. of the patients will be available for this work. Personnel and equipment are furnished in the various hospitals as follows:

National Soldiers' Homes: The Veterans' Bureau is furnishing personnel and equipment for reconstruction work, including occupational therapy, prevocational training and physiotherapy.

Navy Hospitals: Personnel, equipment and material for reconstruction service are furnished by the Veterans' Bureau, the personnel working under the direction of the medical officer in command.

Army Hospitals: The army will operate the entire reconstruction program for the veterans and submit monthly statements, prorating to the bureau its proportion of the expense incurred.

Contract Hospitals, State and County Institutions: The personnel and equipment for the work in these hospitals has been and will continue to be furnished by the bureau. This work should be established in hospitals in which there are fifty or more Veterans' Bureau patients and continued in the smaller hospitals in which it is now established until the number available for the work is reduced to twenty.

Public Health Hospitals: The Public Health Service furnishes all personnel and equipment for physiotherapy and for occupational therapy. The personnel for prevocational training is supplied by the Veterans' Bureau, all members working under the direction of the medical officer in charge.

Causes of Death for 1920.—The Bureau of the Census has just issued a preliminary announcement of the mortality statistics for 1920. During that year there were 1,142,558 deaths within the death registration area, representing a death rate of 13.1 per thousand population as compared with 12.9 in 1919. The record for the year 1919 was the lowest rate recorded in any year since the registration area was established. The following states are still outside of the registration area: Alabama, Arizona, Arkansas, Georgia, Idaho, Iowa, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, West Virginia and Wyoming.

Among the special features to which attention is called is the continued increase in the death rate from pneumonia; from 123.5 per thousand, in 1919, to 137.3, in 1920. For organic diseases of the heart, the rate increased from 131.0 to 141.9—and for cancer from 80.5 to 83.0. Among other diseases for which the rate increased are whooping cough, measles, cerebral hemorrhage, congenital debility and malformations, puerperal fever, scarlet fever and appendicitis. Fatalities caused by automobile accidents and injuries increased from 9.4 per thousand, in 1919, to 10.4, in 1920. The rate for diabetes increased from 14.9 to 16.1. Decreases occurred in the death rate from tuberculosis from 125.6, in 1919, to 114.2, in 1920; influenza from 98.8 to 71.0, and suicide from 11.4 to 10.2.

Special bulletins have been issued on the mortality rates from organic diseases of the heart, cancer, and tuberculosis.

The trend of the death rate from organic diseases of the heart is in general upward, the highest rate being 153.8 for 1917. Cancer was responsible for the death of some 89,000 persons in 1920. This rate also tends to increase, the rate for 1920 being higher than that for any earlier year in twenty-two of the thirty-three states listed. The rate signifies that practically one death in each thirteen is due to cancer. The Northern states have comparatively high and the Southern states comparatively low cancer mortality. The adjusted rates for the white and colored races indicate, however, that the two are equally susceptible. For tuberculosis the trend of the rate is downward, the rate for 1920 being the lowest ever recorded for twenty-nine of the thirty-three states. Curiously enough the highest tuberculosis death rate for 1920 is that of Colorado and the lowest that of Utah, the high death rate for Colorado being due to the attractiveness of the Colorado climate for those afflicted with tuberculosis.

Among the methods chosen for suicide, firearms are most popular, hanging or strangulation, poison, asphyxia, cutting instruments, drowning, jumping from high places and crushing following in the order mentioned.

The rate for smallpox was 0.6 for 1920 and 0.4 for 1919, an interesting commentary on the success of vaccination as a preventive of this disease.

LATIN AMERICA

Memorial to Penna.—A bust of the great Argentine epidemiologist, Dr. José Penna, was recently unveiled in the hall of the medical department of the University of Buenos Aires. It was installed by the Academia de Medicina, which holds its meetings there, Penna having been one of the most active members of the organization, as well as chief of the national public health service.

Prizes Granted in Honduras.—At the recent contest held by the *Revista Médica-Quirúrgica*, prizes were given as follows: first prize, gold medal, pharmacologic section, to Dr. L. Alvarenga, for his "Treatise on Botanics"; medical section, to Dr. S. Nuñez, for his paper on "Hookworm Disease"; second prizes to Drs. A. Padilla, R. Aguilar, L. Alvarenga and F. Cortés R.; third prizes to Drs. M. Quijano Hernández, R. Aguilar and J. A. H. Tifer; fourth prizes to Drs. R. B. Zepeda, H. A. Aragón, J. S. Sepeda and R. Aguilar.

Fifth Cuban National Congress.—The recent medical congress held at Havana, Cuba, was a great success, being attended by more than 1,500 physicians. It was divided into eight sections, five of which were devoted to medical subjects, one to pharmacy, one to odontology and one to veterinary medicine. Among the resolutions adopted was one asking the government to send a commission to attend the annual conference held by medical schools of the United States and another requesting that foreign physicians be licensed to practice their profession only after passing an examination in Spanish.

Personal.—Dr. M. Peralta, a prominent physician of Costa Rica, has returned to his country after being operated on in Philadelphia.——Dr. Nieves C. Barrio of Madrid, Spain, is spending some time in Rochester, Minn.——Dr. Ramón Clares of Chile is now in New York.——The *Semana Médica* relates that Dr. José Arce, professor of surgery at the University of Buenos Aires, has been elected rector for the 1922-1926 term.——Dr. G. Bosch Arana was elected honorary member of the Italian Societa di Ortopedia at its recent annual meeting in tribute to his work in the line of cineplastic amputations.——A petition is being circulated in Buenos Aires appealing to the government to appoint Dr. E. R. Coni member of the board in charge of the sanitary works of the country, as a token of the public gratitude for his indefatigable labors in behalf of public health and hygiene.——A bust of the late surgeon, Dr. Arnaldo Vieira de Carvalho, was recently installed in the large hospital at S. Paulo, the scene of his labors. His name has also been conferred on the newly organized Radium Institute at S. Paulo. The director of the institute is Dr. O. Pires de Campos; the clinical director, Dr. D. de Faria, and the technical director, Dr. O. Portugal. The *Brazil Médico* states that 1.04 gm. of radium bromid has been ordered from New York.

FOREIGN

Plague in Java.—The *Nederlandsch Tijdschrift* states that there were 1,371 cases of plague reported in Java in October, all fatal. The total for September was 1,110, for August, 928, and for July, 430.

Centennial of German Naturforscher Society.—The Naturforscher Congress to convene at Leipzig, Sept. 17-23, this year, is to be a special occasion as it is the centennial of the founding of the Gesellschaft Deutscher Naturforscher und Aerzte and there will be an exhibition in connection.

Russian Medical Journal Appears.—For the first time in several years a medical journal in the Russian language has reached our table. This is the *Meditsinsky Rabotnik*, Vol. 1, No. 1. It is published at Vladivostok in Siberia, and contains six original articles on plague at Vladivostok in 1921, typhoid spondylitis, protein therapy and rupture of the bladder.

Congress of Hygiene.—There is being organized by Dr. Borrel, professor of hygiene and director of the institute at Strasbourg, a congress of hygiene to be held at Strasbourg in the spring of 1923. Dr. Borrel desires to attract groups of physicians in the United States to the congress, and would welcome exhibits of societies, institutions, or dealers in drugs, instruments and medical supplies, from the United States.

Tribute to Spronck.—Professor Spronck retired in 1919 from the charge of the Pathology Institute of the University of Utrecht, and recently his portrait was presented to the institute by a committee of former pupils and other friends, and the ceremony was supplemented by presenting him with a souvenir album of the institute and of those that had worked there with him. De Josselin de Jong is the present director.

Welfare Work for Children in the Netherlands.—On the initiative of Professor Scheltema of Groningen, the Netherlands Association for Child Hygiene organized recently a week of lectures held in six different cities. The lectures were delivered by Professor Nobécourt of the chair of pediatrics at Paris, and were open to the members of the association and their invited guests, the university authorities, and medical students.

The "Picture Archives."—A society has been organized at Freiburg i. B., the headquarters in the publishing house of T. Fischer, which aims to publish the *Bildarchiv*, the purpose of which is to collect and make possible the rational utilization of important scientific illustrations for teaching and other purposes. Besides a central headquarters for negatives and illustrations, it is proposed to make possible the publication of illustrations in a more perfect form than private individuals might realize.

The English Language in Germany.—The German authorities are discussing whether to make the study of English compulsory in the preparatory schools. Hitherto French has been compulsory and English optional. The *Münchener medizinische Wochenschrift* urges physicians in general by every means to advocate making English compulsory, saying in conclusion: ". . . Since scientific research in the United States has made such advances, thanks to the wealth of the country, and American literature is on the point of taking the lead in medicine, a knowledge of English has become indispensable for the research worker." The editorial remarks that young physicians planning to settle in other countries had better be trained in English, which is the predominant language on four continents, rather than in French, as German physicians may be long debarred from settling in French-speaking countries.

Memorial to Magnan.—As already mentioned, an appeal is being circulated by an imposing committee headed by Clemenceau, and including the deans of all the French universities, presidents of a number of medical societies, senators, and others besides a long list of eminent neurologists, psychiatrists and physicians in general, the aim being to erect a monument to the late Dr. V. Magnan, chief of the Ste. Anne asylum at Paris for so many years, whose influence on psychiatry was felt beyond the confines of France, president of the Académie de médecine, etc. Those contributing 40 francs will receive a plaque representing the monument. It is to be unveiled at the asylum on the occasion of the celebration of the centennial of the discovery of general paresis by Bayle, next May. The treasurer of the fund is M. Masson, the publisher, 120 Boul. Saint-Germain, Paris. The secretary of the committee is Dr. H. Colin, Asile de Villejuif, Seine.

Organization of Pharmacists to Combat Quackery.—The *Deutsche medizinische Wochenschrift* quotes with approving comment a circular recently sent by the Apotheker-Vereinigung of Balingen-Ebingen to all the pharmacists in its district. The circular states: "At the present time in which quackery

in our district has increased to such an extent, physicians and pharmacists must stand together to protect their mutual interests. It would undoubtedly hamper the work of charlatans if their remedies could not be obtained in the local drug stores, and if the pharmacists declined to make up their prescriptions. The pharmacists of the district are hereby requested to sign this agreement not to dispense the prescriptions of the quacks in this district." Our exchange adds: "This action should be given the widest attention. It should apply to all pharmacists, and it must be the task of medical organizations (medical chambers and *standesvereine*) to exert their influence so that no pharmacist will make up a prescription for a quack."

CORRECTION

Hospital News.—Dr. William G. Symon, Garret, Ind., states that he will remain with the Garrett (Ind.) clinic, and the report that he was to be associated with the management of the Hillcrest Hospital, at Hemet, Calif., as announced in THE JOURNAL last week, is an error.

Government Services

Radio Health Information Service

A radio health information service has been established by Surgeon-General Cumming of the U. S. Public Health Service. Twice each week radio-telephone messages are to be sent out from Washington—Tuesday at 4 p. m., and Friday at 9 p. m.—the Tuesday schedules to have a range of 250 to 300 miles and the Friday messages a range of 400 to 1,500 miles. Dr. C. Pierce, Assistant Surgeon-General of the U. S. Public Health Service, and Louis K. Heath, radio expert of the U. S. Public Health Service, will have charge of the dispatching of bulletins. A recent message sent out by the Surgeon-General was picked up by all operators west of the Mississippi River.

Proposed Law Governing Medical Corps Promotions

The establishment of a definite law covering promotions in the Medical Corps of the Army is included in proposed legislation that has been submitted to Congress by the Adjutant-General. This legislation provides that an officer in the Medical Corps shall be promoted to the grade of captain after three years' service, to that of major after twelve years' service, to the grade of lieutenant-colonel after twenty years' service, and to the grade of colonel after twenty-six years' service. The purpose of this measure is to promote the efficiency of the medical department of the Army and place every officer in a position whereby he shall know exactly where he stands with regard to promotion and advancement in grade. The legislation was drawn up by Surgeon-General Ireland after the members of his staff had made a careful study of its advantages and disadvantages.

Proposed Legislation for Army Nurse Corps

Reorganization of the Nurses' Corps of the Army has been presented to Congress by the medical department of the Army, and the legislation is now being considered by the committees on military affairs of the two houses. One of the provisions of the proposed law limits the number of student nurses to 260 in time of peace, who shall be appointed by the Surgeon-General of the Army after tests of fitness for training as nurses in hospitals and schools maintained by the military establishment. These student nurses shall receive pay at the rate of $15 per month and allowances for subsistence, quarters, clothing, transportation and laundry. The measure also fixes the ranks of the nurses' corps as follows: superintendent shall have the relative rank of a major; assistant superintendents, director and assistant directors the relative rank of a captain; chief nurses the relative rank of first lieutenants; head nurses and nurses the relative rank of second lieutenants. These nurses also are given authority in and about military hospitals next after the officers of the medical department.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Dec. 2, 1921.

French Medical Books in South America

Continuing his correspondence on South America, Dr. Marcel Labbé, professor in the medical department of the University of Paris, discusses in his last communication the decrease in the sale of French books in South America since the war. This decrease is not due to hostility to France or discontent with French authors. In science in general, and especially in medicine, French books still lead. In Argentina, Brazil and Uruguay, the fundamental treatises in the hands of students are French. Physicians of these various countries are as well acquainted with French ideas and the names of our professors as if they had studied in France. French medical books are, therefore, currently read. Next to their native tongue, French is the language South Americans know best. The study of French is compulsory in their colleges; furthermore, almost all well educated South Americans have visited France at least once, and many have been there several times. However, French books have to meet competition. In medicine—and especially in mathematics, chemistry and physics—many English, American, German and Italian books are read. English and American books have, to an even greater degree, the same drawback as ours: they are too expensive. German books are cheaper, but they are not liked by the students because they find them verbose, not well worked out, obscure, and difficult to understand. They are read less in the original text than in Italian, Spanish or French translations. Spanish textbooks have but few readers. So far, there have been very few scientific Argentine or Brazilian books. There is especially a lack of good compendiums. There are only works on clinical medicine or books treating some special medical or surgical subject. Thus, the books that serve the student best are French. Labbé says that the reduction in the sale of French books is due, above all, to the high prices. Readers limit their purchases to indispensable books; they also buy second-hand books and borrow some from libraries. By some means or other, the price of books must be reduced, and, in order to accomplish this, the cost of paper must come down and demands from printers must become more reasonable. On this depends the maintenance of our intellectual influence in foreign countries. The increase in the publishers' prices for French medical books is not the sole reason for the high prices at which they are sold in foreign countries. We must also take into account the exaggerated profits made by the wholesalers. Some booksellers demand excessive commissions on the sale of French medical books and do not allow the purchaser the benefit of the present low rate of exchange. Another reason for the reduction of sales is the scarcity of French books during the war, since a number of Spanish and Portuguese books have been published with the view of replacing them. Even today, although the publishing business in France shows great activity, there is not a sufficiently large stock of French books on hand in the large cities of South America. Our publishers do not send enough of them. The stock is too quickly exhausted, and the reader who sends an urgent order for a book has to wait too long for its delivery.

Attendance at the University of Paris

Certain information recently published may have led some to believe that the number of students attending the University of Paris, during 1921-1922, is less than last year. In reality, the statistics published up to November 15, show, on the

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contrary, a net increase of 774 students. The university has enrolled 1,110 French students more, and 336 foreign students less, than last year. This decrease in the number of foreign students is due partly to the present conditions in Russia, which in prewar days furnished Paris with a good-sized contingent of men and women students. It is also possible that the conditions of exchange in certain countries of central Europe prevent students from taking up their medical studies in Paris.

The Shamelessness of Manufacturers of "Patent Medicines"

An article entitled, "Applied Therapeutics; Mistletoe as a Hypotensive Medicament," was recently published in the *Journal des praticiens*. In this article a number of works were mentioned (among others, those of Dr. René Gaultier) purporting to show "the superiority of guipsine and preparations of fresh mistletoe over other hypotensive medicaments, such as the iodids, the nitrites, ethereal nitrites, and various other drugs which have been tested and which have successively disappeared from current therapy on account of the inconstancy of their effects and the secondary disturbances they produce." Dr. René Gaultier has sent to the *Journal des praticiens* a vigorous protest "against this false assertion," for, as he says, in none of his researches on mistletoe (a medicament that he introduced), has he ever spoken about guipsine, and consequently has never praised the superiority of that product. The manufacturer simply made an unauthorized use of Dr. Gaultier's name to advertise his product. In answer to Dr. Gaultier's letter, the managing editor of the *Journal des praticiens* stated that as the article entitled "Applied Therapeutics" had not been edited by the editorial department he could not vouch for the accuracy of the bibliographic information. How regrettable it is, however, that any part of a medical journal should escape the control of the editorial department and tend to mislead its readers. There were good and sufficient reasons for the notice that appeared in one of the most important French medical journals of prewar days, the *Semaine médicale*: "The *Semaine médicale* accepts no paid insertions other than regular advertisements."

Retirement of Dr. Brocq

Dr. Brocq, the dermatologist, having reached the age limit, has retired from active hospital service. In celebration of his services, his pupils and friends gathered at the Saint Louis hospital and presented to him his bust designed by the sculptor Landowski. Dr. Veillon, bacteriologist of the Pasteur hospital, presided over the ceremony, he being Brocq's oldest pupil. Among the speeches delivered on this occasion, that of Professor Ehlers of Copenhagen, speaking in the name of the Danish Society of Dermatology, was especially notable. Ehlers is the oldest foreign pupil of Brocq. He began his career in Paris in 1889-1890, when Brocq was filling the place of his teacher, Professor Vidal, at the Saint Louis hospital.

Death of Dr. Gustave Mignen

Dr. Gustave Mignen, founder of the first medical syndicate of France, honorary president of the Federation of Medical Syndicates, died recently in Montaigu, department of Vendée, at the age of 73. The plan of creating medical syndicates was first proposed by Dr. Margueritte of Havre; but it was in 1881 that Mignen brought about its realization.

A New Chair in the Medical Department of the University of Paris

Owing to a grant from the city of Paris, a chair of clinical propedeutics has been created in the University of Paris. Dr. Sergent, physician to the Charité hospital, who is known for his work on suprarenal insufficiency, has been appointed the first incumbent. This appointment constitutes a fact almost without precedent, for Dr. Sergent did not belong to the instructional corps. He had failed previously to secure an appointment as associate professor, but he did not become discouraged. The example set by Lucas Championnière who suffered a similar mishap gave him some hope. He went back to work and has had a brilliant career. Within a period of twenty years he became a member of the Academy of Medicine and has now secured a chair in the medical department of the University of Paris—a rather tortuous road to his goal.

LONDON

(From Our Regular Correspondent)

Dec. 3, 1921.

Protection Against Anthrax

A small trial station for the disinfection of wool and hair against anthrax bacilli has been erected by the government at the Liverpool docks. Provision is made for storing and rebailing and for the recovery of grease. The method adopted is to remove from the material treated the natural protection of the anthrax spores and to render them susceptible to the action of disinfectants. The material is first submitted to the action of an alkaline solution of soap maintained at a temperature of 102 F. for thirty minutes, in three stages of ten minutes each. It is then disinfected with from a 2.0 to a 2.5 per cent. solution of formaldehyd, also at 102 F., for twenty minutes, in two stages of ten minutes each. The bales of wool or hair are hoisted by machinery onto the traveling platform of a specially devised automatic feeding machine provided with an exhaust fan to prevent dissemination of dust, and are delivered into the boiler furnace. The disinfecting plant consists of five baths, each 33 by 4 feet (10 by 1.2 meters), which are fitted with squeezing rollers and a mechanism of the harrow type which causes the material to pass through liquids. The first three baths contain the solution of soap and, incidentally, wash the material; the last two contain the formaldehyd. To prevent the escape of the formaldehyd vapor, the latter baths are enclosed by air-tight covers. When it is necessary to empty the baths or to purify the disinfecting solution, the latter is run by gravity into storage tanks, from which it can be pumped back into the machines, the connecting pipes being so arranged that all displaced air passes from the tanks to the machines, and vice versa. The strength of the solution is maintained by adding strong formaldehyd at intervals. To do this, the machines are provided with a measuring device. The material passes from the disinfecting machine into a wool-drying machine, arranged to prevent the escape into the room of formaldehyd vapor, and in which the material is dried in a current of hot air. To guard against infection, all workmen are provided with overalls. The process is described as the "Duckering" disinfecting process, after its deviser, Mr. G. E. Duckering, secretary of the anthrax committee, who is now director of the station.

The Arsphenamin Treatment of Syphilis

Notwithstanding the vast experience in the treatment of syphilis by arsphenamin and arsphenamin compounds, profound disagreement exists as to the mode of administration and the value and the dangers of the method. At the Medical Society of London, a discussion of the subject was opened by Col. L. W. Harrison, who is in charge of the military hospital for the treatment of venereal diseases in London. He stated that the modern arsphenamin was not nearly so efficient therapeutically as the preparation issued in 1910. The latter was certainly more toxic but the elimination of toxicity seemed to be accompanied by diminished therapeutic effect. The modern arsphenamin was, however, superior in efficacy to neo-arsphenamin; sodium arsphenamin seemed to

be between the two. Silver arsphenamin was probably, as was claimed, about twice as effective as neo-arsphenamin in similar doses. The mode of administration influenced the effect of all these drugs. The vasomotor symptoms which followed intravenous injections of arsphenamin compounds seemed to depend on the physical state of the solution. He found arsphenamin much more prone to cause vasomotor symptoms than neo-arsphenamin, and silver arsphenamin would almost assuredly upset the patient unless it was well diluted. Of the neo-arsphenamin class of preparations, those which dissolved with difficulty were more liable to upset the patient when given in concentrated form. He did not agree with the injection of arsphenamin week after week according to a set program, without careful scrutiny of the patient before each dose. Fatal jaundice after administration seemed to occur in little groups, pointing to some adjuvant factor in its causation. He considered that the reliance placed on continued treatment with mercury after the Wassermann reaction became negative was not justified. Nobody knew how much activity was hidden behind the veil of a negative Wassermann reaction. If arsphenamin were only a symptomatic remedy, its use in the routine treatment of syphilis would be condemned; but it was the strongest specific remedy that we possessed. He upheld the method of chronic intermittent administration, not of mercury only, but of mercury and arsphenamin throughout the whole period of the treatment.

In the discussion which followed, Dr. J. W. McNee said that, among 75,000 patients treated for syphilis at the centers in one year, only ten deaths were reported as due to arsphenamin, and seventy-seven cases of ill effects. But these figures could not be taken as strictly accurate. Deaths might be reported as due to acute yellow atrophy of the liver and other conditions; for to say that death was due to arsphenamin on the certificate was equivalent to saying that the disease was syphilis.

Graduate Medical Teaching

In the coming year, the Fellowship of Medicine and Post-Graduate Association has arranged a series of courses for graduates, which will be of two kinds. There will be instruction in general medicine and surgery of the nature of review courses, and instruction in special subjects, such as gastro-enterology and pediatrics. In January, a six weeks' course in medicine will begin at various special hospitals. It will include neurology, pulmonary diseases, cardiology, pediatrics, fevers and infant welfare. The course has been so arranged that each day the meetings, as far as possible, will be at hospitals near one another. This will avoid the loss of time in going from hospital to hospital, which is the great drawback in this immense city.

Medical History of the War

The first volume of the medical history of the war has been completed by Major-Gen. W. G. Macpherson, editor-in-chief, and will shortly be published. The price is $5. The series is so planned as eventually to comprise twelve volumes: General History of the Medical Service (four volumes); Diseases of the War and the Medical Aspect of Aviation and Gas Warfare (two volumes); Surgery of the War (two volumes); Hygiene of the War (two volumes); Pathology and Medical Research During the War (one volume); Medical Statistics and Epidemiology of the War (one volume). The first volume is a record in narrative form of medical services in the United Kingdom and in the garrisons overseas, with an account of the medical services in the operations against the German colonies in West and Southwest Africa and in Tsingtau. As regards the operations in Southwest Africa, it is stated that the mortality rate from typhoid fever in the South African War, 1899-1902, was 33.8 per thousand average strength for the whole period, the annual ratio being 14.7. In the German Herrero campaign the ratios were 46.5 and 16.3, respectively; while in the Southwestern African campaign, 1914-1915, the ratios were only 0.78 and 0.75, respectively.

BUDAPEST

(From Our Regular Correspondent)

Dec. 1, 1921.

The Influence of Hereditary Alcoholism on the Ability to Suckle

Dr. Zana, director of the Infant Asylum read a paper recently on the influence of hereditary alcoholism on the ability to suckle infants. He said that according to the researches of foreign authors, particularly Dr. Bunge in Germany, the alcoholism of the father at the time of fecundation affected for the worse the germ cells of the fetus so that the mammary glands of the female offspring became stunted in growth and disabled for suckling. This opinion does not seem to rest on very firm ground. In Denmark, Holland and Silesia, and in other parts of the continent in which alcoholism is prevalent, the percentage of suckling women is relatively great. Dr. Zana had made a collective investigation and has found that of daughters of drunkards more than half were able to suckle freely, while in 14 per cent. of the cases the women had suckled the first but not the second child nor the children following. He had further ascertained by experiments on rats fed with alcohol that the mammary glands of the female progeny were quite normal.

Cancer of the Lip

At a recent meeting of the Budapest Medical Society, Dr. Verebély read a paper giving statistical details of the cases of cancer of the lip which have been under observation in his clinic during the last seven years. He said that labial cancer was ten times as frequent in men as in women, and that cancer of the lower lip was twelve times as frequent as that of the upper lip. All parts of the lower lip were alike liable to attack; in the upper lip, on the other hand, the favorite site of the disease was the middle part. Cancer of the lip was most frequent in agricultural laborers and men who smoked pipes. It occurred most between the ages of 55 and 60 years. Preceding inflammations, psoriasis, leukoplakia and scars had an important influence in the development of the disease. As regards the period of admission to hospital more than 84 per cent. of the patients presented themselves within the first year following the onset of the cancer, and in 76 per cent. of the cases the parts were already ulcerated. In 67 per cent. of the cases, there was a regional glandular infiltration present. Of the patients operated on, 69.6 per cent. have now remained free from recurrence for more than five years. In two thirds of the cases in which there has been recurrence, death ensued in the course of the first year.

Scarlet Fever in Hungary

In view of the increase of cases of scarlet fever in Hungary, the minister of public health has addressed a circular to the medical men under his control exhorting them to make a free use of scarlet fever serum (streptococcus serum, and if necessary diphtheria serum, both prepared in the state bacteriologic laboratory and distributed free to poor patients). The circular states that when used early, the first or second day at least of the malady, the mortality was considerably reduced, whereas when delayed two, three or four days, the chances of the patient were considerably compromised.

Infant Mortality in Hungary

The vital statistics for last year, first published, show that although the general mortality has notably decreased that of

infants has scarcely been affected. It would seem that all the hygienic advances which have been made during past years, and which have proved so beneficial to the population at large, have hardly touched the fringe of infant mortality. Its magnitude is accounted for by alimentary disturbances, diarrhea, too frequent feeding, feeding with infected milk, etc. Experiments were made in Budapest with cow's milk from different suburbs, and it was found that dirt was invariably present, varying in amount from 1 to 72 mg. per liter. The first milkings always contain the most dirt, the amount of which decreases proportionately as the milking proceeds. From a hygienic standpoint, it would be wise to discard the first milkings.

BERLIN

(From Our Regular Correspondent)

Dec. 7, 1921.

The Rôle of the Physician in the Regeneration of the People

At a recent meeting of the Berlin Medical Association, after homage had been paid to Rudolf Virchow on the occasion of his hundredth birthday anniversary, the first sessions were devoted to the problem of the regeneration of the people. The subject was introduced with an address by Prof. Paul Lazarus, who discussed the causes and the extent of the extraordinary undermining of public health. Among the causes for the existing condition (for which statistics were adduced) may be mentioned: the extermination, by contraselection, of those most highly resistant to bacterial disease and the preservation of domesticated weaklings, as the result of the war; the increase of affections of an epidemic character, such as rachitis, tuberculosis and venereal diseases; the degeneration due to physical shock, and the intensified struggle for existence; furthermore, the eagerness to get away from rural life, resulting in the agglomeration of the masses in the large cities, which now contain a fourth of the total population. Also alcoholism and the use of tobacco have increased tremendously. Every third house or building in Berlin contains a place devoted to the sale of intoxicating beverages. The number of bars has increased eightfold, of late. Since 1875, the consumption of cigarets has increased 5,800 fold.

The poor housing conditions in the large cities add to the wretchedness of the situation. A deflection from the large cities and the systematic development of the rural districts—an internal colonization, as it were—must, therefore, be brought about as the greatly needed biologic remedy. Prophylactic treatment, instituted in early childhood, must counteract the predisposition to disease. Periodic examinations of supposedly healthy persons are of the greatest importance for the early recognition of incipient pathologic conditions. It is the duty of medicine today to launch and vigorously to defend a well worked-out medical policy. Now, more than ever, we need, for the solution of the many health problems, a ministry of public health detached from all political influence and conducted by physicians, as was proposed by Virchow as far back as 1848, and such as many other countries have already introduced. A reorganization of the public health insurance system is an imperative need for both the physician and the insured, since under the present system the health insurance physician is unable to impress on the masses the requirements of hygiene and health culture. Medicine must get away from hyperindividualism and hyperspecialization and pay more attention to psychophysical hygiene and to preventive treatment from the standpoint of the hereditary constitution of the patient.

Professor Lazarus' address precipitated a lively discussion, which extended over two sessions and dealt mainly with the problem of internal colonization, referred to above. Professor Grotjahn, social hygienist of the University of Berlin, attacked the pessimism of the lecturer and warned against too harsh condemnation of industrialization and the movement cityward. He held—and introduced tables to prove—that the decrease in mortality from tuberculosis, which began in 1882 in Germany and forty years earlier in England, was due to the industrial and cityward movement that set in. For the reduction in the general mortality rate since 1900, social reasons may also be found, for such reduction rests mainly on the decrease in infant mortality, which, in turn, is due to the decrease in the birth rate. In Grotjahn's opinion, physicians should confine their ameliorative activities mainly to social hygiene.

The Physiology of Sport Activities

From the report of Dr. Kohlrausch, in whose laboratory, connected with the German university school of physical culture, researches on sport activities are being conducted, to which I referred in a previous letter, I take the following items:

A comparison of the detailed findings secured at the beginning of the semester with the results obtained at the close of the semester yielded objective clinical evidence of overfatigue due to participation in various sports. It was found that, in harmony with the subjective statements in regard to overexertion during the sport activities of the semester, acceleration of pulse, slower return to normal following exertion, and, in some instances, also changes in the heart sounds, could be noted. Pronounced overexertion was frequently followed by loss of weight. Of those examined at the beginning and at the end of the semester, 40 per cent. showed an increase of weight, 1.45 kg. (3 pounds), on the average. Fifty per cent. had decreased in weight, 1.58 kg. (3½ pounds) being the average amount. With a decrease of more than 2 kg. (4½ pounds) was associated, for the most part, an accelerated pulse and a slower return to normal after exertion. A loss of weight of more than 2 kg. in subjects weighing, say, 66 kg. (145 pounds), must, therefore, be regarded as excessive. The testing of lung capacity showed values that greatly exceeded the commonly recognized standards. Whereas the average lung capacity (vital capacity) for an adult is placed at 3,500 c.c., there was only one student who fell below this standard, while the average finding was 4,500 c.c., and 6,000 was exceeded in six instances. The increases in lung capacity were, in some cases, quite marked, ranging from 50 to 700 c.c. It is worthy of note that growth also could still be influenced. In 74 per cent. of the subjects, there was an average increase of 1 cm. (⅜ inch) in size of the lungs. This increase may, it is true, be due to a better posture or a straightening of the spine. Chest expansion also increases. In 62 per cent., the increase was 1.7 cm. (1$\frac{1}{16}$ inch), on the average, from 7.05 up to 8.75 cm., denoting an increase of 24 per cent. In a number of students, there was an increase in the length of the leg; also in breadth of shoulders and depth of chest. The span of the arms was increased in about 70 per cent. by 2 cm. ($\frac{25}{32}$ inch), on the average. This throws a sidelight on American observations to the effect that the arm-span of white workmen is greater than that of those who do not toil, and shows that growth is not necessarily completed with the twentieth or even the twenty-second year, provided these findings are confirmed by the results in larger series. The relative arm-span; that is, the arm-span in proportion to height, was 104.4 per cent., not materially greater than the average for Germany. However, the relative length of leg was 54.7 per cent. as compared with a normal of 53.8 per cent., which shows the importance of long legs in sport activities. A relative chest measurement of 53.7 per cent. as against a norm of 50 per cent. speaks well for the effect of physical exercises on chest development. The body fulness index of 1.28 testified to a good average state of nutrition.

Former observations were confirmed by an examination of the muscular development. Those who were engaging in sports requiring the exercise of great strength found that the circumference of the arm at the biceps had increased up to 4 cm. (1 9/16 inches), whereas, in lightweight athletes, there was a decrease. (Only changes of circumference of more than 1.2 cm. (15/32 inch) were recorded.) Swimmers showed, as a rule, an increase in upper-arm measurements, doubtless due to an accumulation of subcutaneous fatty tissue.

Studies were also made on the types of men who engaged in the several sports. Especially the swimmer type was studied in a number of excellent swimmers. They were found to have a long torso, long arms, a strong well-arched chest, and a firm skin well supported with adipose tissue.

Sixtieth Birthday Anniversary of Professor Bier

On November 24, Prof. August Bier celebrated his sixtieth birthday. His book "Ueber den Wert der künstlich aktiven und passiven Hyperämie," dealing with the so-called Bier hyperemia is known throughout the world.

Professor Haertel's Appointment

Professor Haertel, chief of the surgical clinic in Halle, has been called to the University of Osaka, Japan, as ordinarius and director of the surgical clinic. Haertel was formerly connected with the Berlin Pathologic Institute and while so engaged was associated with certain Japanese, which fact led to his present appointment.

PRAGUE

(From Our Regular Correspondent)

Dec. 3, 1921.

The State Budget

The recent discussion of the state budget in parliament has shown that the ministry of public health and physical education has been strengthened by the appointment of a socialist to the position of minister of health. The budget of the ministry of health for 1922, which is nearly double the budget for 1921, has been warmly recommended to the parliament by socialistic deputies. This has been a surprise as under the régime of previous ministers, the socialists always defended the idea of combining the ministry of health with the ministry of social welfare. The budget of the ministry of health will form 1 per cent. of state expenditures for the year 1922. Of 149,000,000 crowns, 37,000,000 will be given for the nationalization of hospitals. The budget has encountered virtually no criticism and has been passed by parliament. This change of attitude on the part of socialistic parties toward the ministry makes it probable that the bills that the ministry submitted to the parliament some time ago will find the necessary majority. Interest lies chiefly in the venereal diseases bill, which has been pending in the parliament for more than six months. The bill which proposes to nationalize all health officers will probably be postponed because of the wave of economy that has flooded the country.

Popular Health Education

The league of Red Cross societies has undertaken a demonstration of popular health education in Czechoslovakia. The work was started early in the year, under the direction of Mr. Marshal C. Balfour. A unit has been organized along the lines of those used by the Rockefeller Foundation in France. The unit is using three full-time physicians, one of them a woman, as lecturers. The unit prepared its own educational material, pamphlets, postcards and posters. Lectures are given to school children, soldiers and the general public on the topics of tuberculosis, child hygiene and venereal disease. Since the time when it was started, the unit has visited about sixty communities and has been received with great success everywhere. Recently, a demonstration was organized in a town near Prague for people prominent in the field of public health and for representatives of the press. All the leading papers have published sympathetic articles on the excellent work the unit is doing. The unit will be taken over at the end of the current year by the Czechoslovak Red Cross, which is considering the possibility of establishing another unit to work especially in Slovakia. It is also probable that the ministry of health will establish a permanent division for public health education.

Tuberculosis Survey

Dr. Jaroslav Hulka, former student of the Phipps Institute in Philadelphia and of the Trudeau School of Tuberculosis at Saranac Lake, has just finished a tuberculosis survey of Czechoslovakia. The work was entrusted to him by the ministry of public health. Based on five-year averages of tuberculosis mortality, he has found that Czechoslovakia occupies fifth place in the list of nineteen countries, arranged in a decreasing scale according to their tuberculosis mortalities. Czechoslovakia undoubtedly still belongs among the countries with high tuberculosis death rates; but at the same time, the author points out that it is a country in which tuberculosis has been rapidly decreasing for the last thirty years. The percentage of decrease in the Czech provinces of Czechoslovakia, Bohemia, Moravia and Silesia is about as great as that noted in England and Wales; but the decrease of England and Wales is of an earlier date, which explains the lower tuberculosis mortality of these countries. The tuberculosis death rate of the Czech provinces in 1913 was 285; but it increased 37 per cent. during the war. After the war, the tuberculosis death rate dropped rapidly, and the tuberculosis mortality curves in 1920 reached the point it might have been expected to reach when its antebellum downward trend is considered.

In Czechoslovakia, there was no well developed antituberculosis campaign before the war. But the hospitalization and national prosperity developed rapidly, and has had a good influence on the tuberculosis mortality.

The new republic created a division of social diseases in the ministry of public health, which handles the tuberculosis problems. A new antituberculosis association was organized, which, called after the name of the first president of the republic the Masaryk Antituberculosis League, has about 100 local branches and 20,000 members. There are seventy-two dispensaries, more than fifty of them having been established since the war. Nevertheless, there are at least seventy cities with a population of more than 10,000 in which dispensaries should be established if the antituberculosis fight is to comply with the needs of a country of 13,500,000 population.

There are fifty-one special establishments for the treatment of tuberculosis, including twenty-one hospitals, camps, and sanatoriums for children. There are also seventeen other sanatoriums for adults and thirteen pavilions connected with general hospitals. The total number of beds is, however, only 4,000, approximately. Dr. Hulka says that, considering the number of tuberculosis deaths occurring yearly, at least 20,000 tuberculosis beds should be provided in Czechoslovakia.

The chief criticism of Dr. Hulka concerns the tuberculosis nursing situation. He states that in the seventy-two dispensaries there are only sixteen nurses with professional training, the rest having had only short courses in nursing. He suggests a large plan for the training of tuberculosis workers, including nurses, secretaries of the local associations, and tuberculosis medical officers.

Professor S. M. Gunn, representative of the Rockefeller Foundation, assisted in the survey, which will be reported within a few months, with an abstract in English.

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THE REFERENDUM ON THE USE OF ALCOHOL IN THE PRACTICE OF MEDICINE

(*Continued from page 2140*)

On December 24, THE JOURNAL published the results of the referendum on the use of alcohol in the practice of medicine in Illinois and Indiana. Last week appeared the reports on Idaho, Kansas, Maine, Mississippi, Nebraska and Rhode Island. This week results are given for eleven states, viz.: Arizona, Colorado, Connecticut, Delaware, Georgia, Iowa, Michigan, Montana, North Dakota, Ohio and Pennsylvania. Under "Comments," in each state, are printed selections from some of the replies; lack of space prevents giving more than a few of these comments.

ARIZONA

The prohibitory law in Arizona became effective on Jan. 1, 1915. There is no provision in it for the sale of alcoholic liquor or alcohol as a medicine either on prescription or otherwise.

Questionnaires were sent to 173 physicians in Arizona; 110, or 64 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: yes, 55; no, 53.

On the question "Is beer a necessary therapeutic agent?" the vote was: yes, 29; no, 81.

RESULTS IN ARIZONA

Number of physicians	380
Questionnaires sent	173
Questionnaires returned	110
Percentage of returns	64
General practitioners	94
Surgeons	7
Specialists	9
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?	
Yes	55
No	53
Do you regard beer as a necessary therapeutic agent in the practice of medicine?	
Yes	29
No	81
Do you regard wine as a necessary therapeutic agent in the practice of medicine?	
Yes	37
No	73
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?	
Yes	34
No	74
How many times have you found it advisable to prescribe these liquors in a month?	
Whisky: Number of physicians stating times advisable	25
Number of physicians stating no times advisable	42
Beer: Number of physicians stating times advisable	10
Number of physicians stating no times advisable	53
Wine: Number of physicians stating times advisable	15
Number of physicians stating no times advisable	54
Do you hold a federal permit?	
Yes	4
No	27
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?	
Yes (limit not specified)	19
Restricted absolutely	12
1 to 50 prescriptions	11
51 to 100 prescriptions	11
More than 100 prescriptions	0
Total	53
No restriction	51
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?	
Yes	56
No	52

On the question "Is wine a necessary therapeutic agent?" the vote was: yes, 37; no, 73.

On the question whether physicians had witnessed cases of unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 34; no, 74.

On the question as to the number of times physicians had found it advisable to prescribe whisky, 25 had found it advisable, and 42 had not found it advisable; 10 had found it advisable to prescribe beer, and 53 had not found it advisable; 15 had found it advisable to prescribe wine, and 54 had not found it advisable.

Four physicians stated that they held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 53 stated that they should be restricted, and 51 did not believe such restrictions necessary; 19 answered yes, but did not specify a limit; 12 believed in absolute prohibition; 11 believed from 1 to 50 prescriptions in three months sufficient; 11 believed from 51 to 100 sufficient, and none considered the amount required to be more than 100 in three months.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 56; no, 52.

COMMENTS

As to restrictions—they are necessary, just as narcotics. True, there are many doctors willing to prostitute their profession for pecuniary gains. If they were restricted to prescribing in therapeutic doses it would be better than to restrict the number of prescriptions—theoretically, at least.—*Clemenceau.*

Since Arizona has gone dry, the working man's family is much better off and the doctor's bills more promptly paid. While there is plenty of bootleg it is not near as bad as when the state was wet. If prescribing whisky, wine or beer were permitted in this state I would be compelled to take out a permit in order to keep my friends and thus retain their legitimate practice. This would, of course, class me as a second rate bartender, which I have no desire to be.—*Globe.*

Having been connected with the care of indigent and criminal elements for the last twenty years, I am convinced that prohibition is the greatest step forward that the United States has made since the Declaration of Independence was signed; and that the manifold blessings in the form of social, mental, physical and financial betterment of all classes of our people, and especially the class likely to become indigent or criminal, cannot be measured. No argument in favor of the manufacture or use of intoxicating beverages can refute the silent argument of the statistics that have been gathered covering only two years of "semiprohibition."—*Cochise County.*

When I have occasion to recommend it, I tell the patient to use it, if he can get it. It is always obtainable, though of inferior quality. Mexican liquor—tequila—which is of high alcoholic content, and a distilled product, I presume would be classed under whisky.—*Tucson.*

In certain cases I do not hesitate to obtain whisky illegally and furnish it to certain patients gratis where it will save life. In certain cases of inoperable cancer, I conspire with judges, marshals, chiefs of police, sheriffs and others, and obtain it and furnish it gratis.—*Globe.*

In the past year I have seen perhaps twenty-five patients who would have, in my opinion, been helped considerably by alcohol in proper doses. However, the Arizona law does not recognize such a state of affairs. In the case of the twenty-five patients mentioned I either procured liquor for them through the sheriff's office or advised them to obtain it by illicit means; in each instance definite improvement followed.—*Phoenix.*

CONNECTICUT

Connecticut, with the exception of a local option law, has no state legislation, except a provision that any physician holding a federal permit may prescribe liquor.

Questionnaires were sent to 714 physicians in Connecticut, and 394, or 55 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: New Haven, yes, 39; no, 32; Hartford, yes, 32; no, 28; Bridgeport, yes, 19; no, 13; Waterbury, yes, 18; no, 6; New Britain, yes, 5; no, 0. Total for cities: yes, 113; no, 79; for the rural districts, yes, 125; no, 77; for the state, yes 238; no, 156.

On the question "Is beer a necessary therapeutic agent?" the vote was: New Haven, yes, 22; no, 47; Hartford, yes, 14; no, 45; Bridgeport, yes, 11; no, 21; Waterbury, yes, 8; no, 16; New Britain, yes, 3; no, 2. Total for the cities: yes, 58;

no, 131; for the rural districts, yes, 61; no, 140; for the state, yes, 119; no, 271.

On the question "Is wine a necessary therapeutic agent?" the vote was: New Haven, yes, 24; no, 45; Hartford, yes, 19; no, 40; Bridgeport, yes, 13; no, 19; Waterbury, yes, 12; no, 12; New Britain, yes, 3; no, 2. Total for the cities: yes, 71; no, 118; for the rural districts, yes, 82; no, 117; for the state, yes, 153; no, 235.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of prohibition laws the replies were: yes, 96; no, 283.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 169 had found it advisable to prescribe whisky, and 130 had not found it advisable; 34 had found it advisable to prescribe beer, and 201 had not found it advisable; 82 had found it advisable to prescribe wine, and 173 had not found it advisable.

There is so much red tape connected with the prescribing of alcoholics that I have not taken out a permit.—*Stamford.*

Physicians have been slow in making application for permits to prescribe liquors, for the reason that up until very recently they could be obtained by patients without great difficulty because of the laxity in the enforcement of the prohibition law. But as enforcement becomes more of a reality we become conscious of the loss of a very valuable therapeutic agent. I have just applied for a permit.—***Branford.***

I don't like the idea of the laymen, in legislative halls or out, telling me how I shall practice medicine. I was supposed to have that in college under competent instructors.—***Danielson.***

In my experience, the inability to obtain grain alcohol, clean and pure, is a dreadful handicap in the administration of medication hypodermically, both to sterilize the site of injection and to clean the needle after use, after boiling to remove the water.—***Ridgefield.***

I had a pretty thorough and practical training in pharmacy. It has been my custom to make the majority of the liquid preparations that I dispense. I enjoy doing it and know, absolutely, that such preparations are properly made and that the ingredients are of good quality. The fact that I am unable to obtain pure alcohol for the above purpose compels me to give them up and employ others of uncertain quality.—*Tolland County.*

RESULTS IN CONNECTICUT

CONNECTICUT	New Haven	Hartford	Bridgeport	Waterbury	New Britain	Total Cities	Rural	Grand Total
Number of physicians	318	286	174	109	51	938	791	1,729
Questionnaires sent	121	99	62	48	13	353	361	714
Questionnaires returned	71	60	32	24	5	192	202	394
Percentage of returns	54	61	52	50	38	54	56	55
General practitioners	45	35	21	14	5	120	177	297
Surgeons	13	11	4	7	..	36	7	43
Specialists	13	14	6	3	..	36	18	54
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?								
Yes	39	32	19	18	5	113	125	238
No	32	28	13	6	..	79	77	156
Do you regard beer as a necessary therapeutic agent in the practice of medicine?								
Yes	22	14	11	8	3	58	61	119
No	47	45	21	16	2	131	140	271
Do you regard wine as a necessary therapeutic agent in the practice of medicine?								
Yes	24	19	13	12	3	71	82	153
No	45	40	19	12	2	118	117	235
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?								
Yes	16	5	6	6	1	36	60	96
No	51	54	24	15	3	147	136	282
How many times have you found it advisable to prescribe these liquors in a month?								
Whisky: Number of physicians stating times advisable	26	22	14	10	1	80	89	169
Number of physicians stating no times advisable	50	21	15	4	3	73	57	130
Beer: Number of physicians stating times advisable	8	2	4	3	..	17	17	34
Number of physicians stating no times advisable	39	36	22	14	4	115	86	201
Wine: Number of physicians stating times advisable	15	12	3	11	..	39	43	82
Number of physicians stating no times advisable	36	31	23	7	4	101	72	173
Do you hold a federal permit?								
Yes	22	19	12	7	3	63	70	133
No	47	36	17	13	2	110	106	216
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?								
Yes (limit not specified)	15	9	3	3	..	30	50	80
Restricted absolutely	3	3	3	1	..	10	3	13
1 to 50 prescriptions	4	3	..	2	..	9	9	18
51 to 100 prescriptions	6	17	8	2	..	33	20	53
More than 100 prescriptions	..	1	..	..	..	1	..	1
Total	28	33	14	8	..	83	82	165
No restriction	38	26	18	15	5	102	114	216
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?								
Yes	33	32	13	11	2	91	89	180
No	34	27	18	12	3	94	102	196

One hundred and thirty-three physicians stated that they held federal permits, and 216 of those replying stated that they did not hold federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 165 stated that they should be restricted, and 216 did not believe such restrictions necessary; 80 physicians answered yes, but did not specify a limit; 13 stated that no prescriptions of any kind should be allowed; 18 considered from 1 to 50 prescriptions in three months sufficient; 53 considered from 51 to 100 satisfactory, and 1 physician considered 100 insufficient.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 180; no, 196.

COMMENTS

I am in favor of regulation which would follow the lines of the Harrison act. The latter has been found to be fully able to indicate the dishonorable physician who has violated the intent of the law. It should be for the physician, not the politician, to decide the indications and the kind of alcoholic preparations to be prescribed. The number of prescriptions for liquor means very little. It indicates the number of times that liquor has been obtained legally and nothing else.—*Bridgeport.*

COLORADO

The state prohibitory law in Colorado went into effect on Jan. 1, 1916. Under its provisions registered physicians may prescribe intoxicating liquor in an amount not to exceed 4 ounces, on blanks furnished by the secretary of state, which must be signed by the physician, giving his address and the date and hour on which they were issued, the disease or malady for which the prescription is given, the address of the patient and the number and date of the previous prescriptions for such person during the present year. All prescriptions must be filled within forty-eight hours of the time they were issued.

Questionnaires were sent to 615 physicians in Colorado; 370, or 60 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote in Denver was: yes, 53; no, 69; in the rural districts, yes, 101; no, 145; for the state, yes, 154; no, 214.

On the question "Is beer a necessary therapeutic agent?" the vote in Denver was: yes, 26; no, 97; in the rural districts, yes, 47; no, 195; for the state, yes, 73; no, 292.

On the question "Is wine a necessary therapeutic agent?" the vote in Denver was: yes, 32, no, 88; in the rural districts, yes, 51; no, 186; for the state, yes, 83; no, 274.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 63; no, 287.

RESULTS IN COLORADO

COLORADO	Denver	Rural	Total
Number of physicians	786	1,031	1,817
Questionnaires sent	231	384	615
Total questionnaires received	123	247	370
Percentage of returns	53	64	60
General practitioners	81	215	296
Surgeons	20	11	31
Specialists	22	21	43
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?			
Yes	53	101	154
No	69	145	214
Do you regard beer as a necessary therapeutic agent in the practice of medicine?			
Yes	26	47	73
No	97	195	292
Do you regard wine as a necessary therapeutic agent in the practice of medicine?			
Yes	32	51	83
No	88	186	274
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?			
Yes	17	46	63
No	100	187	287
How many times have you found it advisable to prescribe these liquors in a month?			
Whisky: Number of physicians stating times advisable	40	72	112
Number of physicians stating no times advisable	59	128	187
Beer: Number of physicians stating times advisable	4	23	27
Number of physicians stating no times advisable	83	152	235
Wine: Number of physicians stating times advisable	11	30	41
Number of physicians stating no times advisable	76	148	224
Do you hold a federal permit?			
Yes	26	40	66
No	72	141	213
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?			
Yes (limit not specified)	28	38	66
Restricted absolutely	13	38	51
1 to 50 prescriptions	7	19	26
51 to 100 prescriptions	21	41	62
More than 100 prescriptions	1	1	2
Total	70	137	207
No restriction	34	96	130
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?			
Yes	74	143	217
No	46	92	138

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 112 had found it advisable to prescribe whisky, and 187 had not found it advisable; 27 had found it advisable to prescribe beer, and 235 had not found it advisable; 41 had found it advisable to prescribe wine, and 224 had not found it advisable.

Sixty-six physicians held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 207 stated that they should be restricted, and 130 did not believe such restriction necessary; 66 physicians answered yes, but did not specify a limit; 51 believed that no prescribing should be allowed; 26 considered from 1 to 50 prescriptions in three months sufficient; 62 physicians considered from 51 to 100 satisfactory, and 2 physicians considered 100 insufficient.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 217; no, 138.

COMMENTS

I am firmly of the belief that the present prohibition laws are a farce and tend to cause more illness and fatalities than a properly framed license law. . . . If you know the history of this city, which is unique in the management of the liquor condition, you will have my idea of a method of controlling the whisky nuisance. In the original town site of Colorado Springs the town site company incorporated in every deed a clause prohibiting the manufacture or sale of alcoholics with a penalty that the property would revert to the original deeder if disobeyed. Property had reverted from this penalty and the act was sustained by decision of the U. S. Supreme Court.—*Colorado Springs.*

Were I to need 4 ounces of whisky for a patient in an emergency right now I would not know how to obtain it. No drugstore here will carry it because the risk of robbery is too great. At the time of the Pueblo disaster in June, 1921, none was available until it could be shipped in. Some people do obtain whisky in what they deem an emergency, and obtain it on their own responsibility. What they get is injurious.—*Colorado Springs.*

I have practiced medicine over forty years. In all that time I have not prescribed a half gallon. In some cases whisky would come in handy. I do not like the present way of handling the liquor question. It is outrageous.—*Denver.*

The present federal restrictions are sufficient, but our state law in Colorado goes to the extreme.—*Denver.*

I believe the present restrictions by federal license are desirable because without such there is too great a tendency to prescribe for beverage purposes under the guise of therapeusis. There is something radically wrong about a system which makes a barkeep of a physician. —*Denver.*

DELAWARE

Prior to the national prohibition act, Delaware had been under prohibition for a number of years, with the exception of the city of Wilmington. Physicians in good standing are allowed under the state law to prescribe pure grain or ethyl alcohol only, for patients whom they have personally examined.

Questionnaires were sent to 113 physicians in Delaware, and 74, or 65 per cent., were returned.

RESULTS IN DELAWARE

DELAWARE	Wilmington	Rural	Total
Number of physicians	140	122	262
Questionnaires sent	50	63	113
Questionnaires returned	34	40	74
Percentage of returns	68	63	65
General practitioners	22	40	62
Surgeons	7	..	7
Specialists	5	..	5
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?			
Yes	25	22	47
No	8	18	26
Do you regard beer as a necessary therapeutic agent in the practice of medicine?			
Yes	10	9	19
No	24	31	55
Do you regard wine as a necessary therapeutic agent in the practice of medicine?			
Yes	10	9	19
No	24	31	55
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?			
Yes	13	14	27
No	18	24	42
How many times have you found it advisable to prescribe these liquors in a month?			
Whisky: Number of physicians stating times advisable	10	6	16
Number of physicians stating no times advisable	12	20	32
Beer: Number of physicians stating times advisable	3	1	4
Number of physicians stating no times advisable	16	23	39
Wine: Number of physicians stating times advisable	4	1	5
Number of physicians stating no times advisable	17	21	38
Do you hold a federal permit?			
Yes	9	12	21
No			
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?			
Yes (limit not specified)	1	3	4
Restricted absolutely	3	8	11
1 to 50 prescriptions	4	3	7
51 to 100 prescriptions	5	3	8
More than 100 prescriptions	1	..	1
Total	14	17	31
No restriction	19	21	40
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?			
Yes	15	20	35
No	19	19	38

On the question "Is whisky a necessary therapeutic agent?" the vote in Wilmington was: yes, 25; no, 8; in the rural districts, yes, 22; no, 18; a total for the state of yes, 47; no, 26.

On the question "Is beer a necessary therapeutic agent?" the vote in Wilmington was: yes, 10; no, 24; in the rural districts, yes, 9; no, 31; for the state, yes, 19; no, 55.

On the question "Is wine a necessary therapeutic agent?" the vote in Wilmington was: yes, 10; no, 24; in the rural districts, yes, 9; no, 31; for the state, yes, 19; no, 55.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 27; no, 42.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 16 had found it advisable to prescribe whisky, and 32 had not found it advisable; 4 had found it advisable to prescribe beer, and 39 had not found it advisable; 5 had found it advisable to prescribe wine, and 38 had not found it advisable. None of the physicians replying held a federal permit.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 31 stated that they should be restricted, and 40 did not believe such restrictions necessary; 4 physicians answered yes, but did not specify a limit; 11 believed in absolute prohibition; 7 believed from 1 to 50 in three months sufficient; 8 believed from 51 to 100 sufficient, and 1 physician considered the amount required to be more than 100 in three months.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 35; no, 38.

COMMENTS

I do not know what method should be used to prevent present abuses of prescriptions which are prevalent in large cities in the East. This state does not permit a physician or hospital to use or prescribe wine, whisky or beer. In a legislature composed entirely of laymen it is difficult to see why they permit a hospital to use any narcotic.—*Wilmington.*

Probably from 90 to 95 per cent. of my work is now done in institutions where I can secure whisky and brandy when prescribed, whether legally or not I do not know. I have never felt that the field for whisky, etc., in medicine was a wide one, but do feel that at times it is very necessary. My opposition to our present prohibition laws is so intense that for the past two years I have "scratched" the names of all candidates favorable to them.—*Wilmington.*

I am not a prohibitionist. Alcoholic liquids are bad enough to drink; worse for medicinal purposes. Why should you want to prescribe alcohol when you have access to aromatic spirit of ammonia, strychnin, etc.?—*Delmar.*

GEORGIA

The Georgia prohibitory law became effective, Jan. 1, 1908. Under it physicians may prescribe pure alcohol, but it must be so medicated as to render it absolutely unfit for use as a beverage.

Questionnaires were sent to 1,040 physicians; 502, or 48 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: for Atlanta, yes, 36; no, 44; Savannah, yes, 14; no, 10; Augusta, yes, 11; no, 10; Macon, yes, 5; no, 10; a total for the cities over 50,000 in population of yes, 66; no, 74; for the rural districts, yes, 153; no, 207; total for the state, yes, 219; no, 281.

On the question "Is beer a necessary therapeutic agent," the vote was: for Atlanta, yes, 21; no, 59; Savannah, yes, 6; no, 18; Augusta, yes, 4; no, 17; Macon, yes, 3; no, 12; a total for the cities over 50,000 in population of yes, 34; no, 106; for the rural districts, yes, 80; no, 275; total for the state, yes, 114; no, 381.

RESULTS IN GEORGIA

GEORGIA	Atlanta	Savannah	Augusta	Macon	Total Cities	Rural	Grand Total
Number of physicians	583	132	116	107	938	2,468	3,406
Questionnaires sent	167	62	56	48	333	707	1,040
Questionnaires returned	80	25	21	15	141	361	502
Percentage of returns	48	40	38	31	42	51	48
General practitioners	49	19	17	10	95	336	431
Surgeons	18	2	1	3	24	11	35
Specialists	13	4	3	2	22	14	36
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?							
Yes	36	14	11	5	66	153	219
No	44	10	10	10	74	207	281
Do you regard beer as a necessary therapeutic agent in the practice of medicine?							
Yes	21	6	4	3	34	80	114
No	59	18	17	12	106	275	381
Do you regard wine as a necessary therapeutic agent in the practice of medicine?							
Yes	22	5	4	4	35	78	113
No	56	19	17	11	103	277	380
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?							
Yes	5	5	4	3	17	77	94
No	63	17	16	11	107	270	377
How many times have you found it advisable to prescribe these liquors in a month?							
Whisky: Number of physicians stating times advisable	15	9	7	5	36	101	137
Number of physicians stating no times advisable	37	8	9	5	59	192	251
Beer: Number of physicians stating times advisable	7	2	2	2	13	37	50
Number of physicians stating no times advisable	45	11	12	6	74	221	295
Wine: Number of physicians stating times advisable	6	1	2	2	11	38	49
Number of physicians stating no times advisable	45	12	12	6	75	220	295
Do you hold a federal permit?							
Yes	2	..	..	..	2	6	8
No	69	11	9	6	49	185	204
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?							
Yes (limit not specified)	21	2	8	1	32	54	86
Restricted absolutely	12	6	3	2	23	82	105
1 to 50 prescriptions	7	..	0	0	11	14	25
51 to 100 prescriptions	8	4	4	1	17	50	67
More than 100 prescriptions	..	..	..	..	..	1	1
Total	48	12	17	6	83	201	284
No restriction	26	11	4	7	48	141	189
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?							
Yes	49	13	19	8	89	230	309
No	27	11	2	6	46	127	173

On the question "Is wine a necessary therapeutic agent?" the vote was: for Atlanta, yes, 23; no, 56; Savannah, yes, 5; no, 19; Augusta, yes, 4; no, 17; Macon, yes, 4; no, 11; a total for the cities over 50,000 in population of yes, 36; no, 103; for the rural districts, yes, 76; no, 277; total for the state, yes, 112; no, 380.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 94; no, 377.

One hundred and thirty-seven physicians stated that they had found it advisable to prescribe whisky, and 251 had not found it advisable; 50 had found it advisable to prescribe beer, and 295 had not found it advisable; 49 had found it advisable to prescribe wine, and 295 had not found it advisable.

Eight physicians stated that they held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 284 stated that they should be restricted, and 189

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considered no restrictions advisable: 86 physicians answered yes without specifying a limit; 105 believed that the restriction should be complete; 25 considered from 1 to 50 prescriptions in three months satisfactory; 67 considered from 51 to 100 sufficient, and 1 considered more than 100 prescriptions in three months necessary.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 309; no, 173.

COMMENTS

It is a medical proposition and should be handled by the medical profession. Have the secretary of each state medical association issue licenses to reputable physicians in the state. If a license is abused, have a state medical committee pass on the abuse and revoke the license if advisable. Have the state medical committee responsible to an A. M. A. committee created for this special purpose. Let the A. M. A. committee also serve as a final court of appeals from the state medical committee's ruling.—*Augusta.*

Even in innumerable cases when life cannot be saved by alcohol, the patient can be made more comfortable in the same way that opiates and anodynes may not save life but may assuage pain and make the patient more comfortable.—*Savannah.*

IOWA

The present state law became effective on Jan. 7, 1916. Under it physicians may procure intoxicating liquors, not including malt liquors, and may dispense them to patients who are actually sick. Such liquors must be purchased from a pharmacist holding a special permit to sell liquor for medicinal purposes. There are no provisions in the state law regarding prescribing but the commissioners of pharmacy of the state are empowered to make regulations on this subject.

Questionnaires were sent to 1,488 physicians in Iowa; 1,004, or 67 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: in Des Moines, Sioux City and Davenport, yes, 51; no, 44, for the rural districts, yes, 425; no, 478; for the state, yes, 476; no, 522.

On the question "Is beer a necessary therapeutic agent?" the vote was: yes, 220; no, 775. In the three largest cities the vote was: yes, 20; no, 75; in the remainder of the state, yes, 200; no, 700.

RESULTS IN IOWA

IOWA	Des Moines	Sioux City	Davenport	Total Cities	Rural	Grand Total
Number of physicians	254	124	106	484	3,052	3,536
Questionnaires sent	95	58	43	196	1,292	1,488
Questionnaires returned	51	28	17	96	908	1,004
Percentage of returns	54	48	40	49	71	67
General practitioners	37	19	12	68	826	894
Surgeons	11	6	3	19	44	63
Specialists	3	3	3	9	38	47
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?						
Yes	25	16	10	51	425	476
No	25	12	7	44	478	522
Do you regard beer as a necessary therapeutic agent in the practice of medicine?						
Yes	8	7	5	20	200	220
No	42	21	12	75	700	775
Do you regard wine as a necessary therapeutic agent in the practice of medicine?						
Yes	10	11	6	27	215	242
No	39	17	11	67	684	751
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?						
Yes	9	9	5	22	191	213
No	42	19	11	72	688	760
How many times have you found it advisable to prescribe these liquors in a month?						
Whisky: Number of physicians stating times advisable	23	13	9	45	285	330
Number of physicians stating no times advisable	20	10	7	37	457	494
Beer: Number of physicians stating times advisable	3	5	3	11	84	95
Number of physicians stating no times advisable	36	15	8	49	598	647
Wine: Number of physicians stating times advisable	5	5	3	13	82	95
Number of physicians stating no times advisable	26	15	8	49	602	651
Do you hold a federal permit?						
Yes	15	4	5	24	174	198
No	36	11	9	45	468	513
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?						
Yes (limit not specified)	7	1	2	10	158	168
Restricted absolutely	9	4	2	15	135	150
1 to 50 prescriptions	5	2	1	8	108	116
51 to 100 prescriptions	12	8	8	28	146	174
More than 100 prescriptions	1	...	...	1	12	13
Total	34	15	13	62	559	621
No restriction	16	10	4	30	325	355
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?						
Yes	35	16	12	63	566	629
No	13	10	5	28	322	350

Its use should be permitted just as morphin, etc. If alcoholic preparations are placed under the same restrictions as prescribed in the Harrison Narcotic Law, the question will be settled.—*Atlanta.*

Georgia is by statute dry, and has been for several years. The law makes no provision whatever for the use of alcohol for internal administration. Therefore, owing to the absurd stringency of our dry law, nobody observes it. Whisky of a kind can be had at any time, by anyone.—*Blakely.*

I do not hold a permit, nor would I if prescriptions for alcoholics could be filled in this state. I do not propose to be worried and embarrassed by my foul friends.—*Warren County.*

It is unfair to the medical profession to attempt to use the physicians of this country as a subterfuge to evade the prohibition laws to secure alcoholic drinks. I am not a prohibitionist by any means. I would like to see the law modified; but until that is done, I don't think it is for the best interests of the medical profession for us to be allowed to prescribe—the opportunity for evil is greater than for good.—*Rome.*

Should be restricted to those who are perfectly honest, if Abderhalden or some other deeply learned chemist could discover some test to precipitate them.—*Macon.*

The only thing I wish is that we could get pure alcohol easier than we can for cleaning and sterilizing purposes. Although, if it takes this restriction on alcohol to put the "Ban" on alcoholics in general I am willing to suffer the present inconvenience.—*Ocilla.*

On the question "Is wine a necessary therapeutic agent?" the vote was: yes, 242; no, 751. In the three largest cities the vote was: yes, 27; no, 67; in the remainder of the state, yes, 215; no, 684.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 213; no, 760.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 330 had found it advisable to prescribe whisky, and 494 had not found it advisable; 95 had found it advisable to prescribe beer, and 647 had not found it advisable; 95 had found it advisable to prescribe wine, and 651 had not found it advisable. One hundred and ninety-eight physicians stated that they held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 621 were in favor of some kind of restriction; 355 were opposed to any limit on the number of prescriptions which a

physician might write. Of these, 168 voted in favor of restriction without specifying any limit; 150 were in favor of absolute prohibition; 116 were in favor of allowing the physician to prescribe from 1 to 50 in three months; 174 favored a limit of from 51 to 100 prescriptions in three months, and 13 were in favor of allowing more than 100 prescriptions in three months.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 629; no, 350.

COMMENTS

The liquor traffic cannot be controlled by placing limits on the amounts that a physician may prescribe and on the number of prescriptions. Liquors should be handled only by responsible persons who are government agents, so that the government may not be required to watch any one except its own employees to see that liquors intended for nonbeverage purposes are not unlawfully obtained or used.—*Cherokee.*

Physicians are now regulated entirely too much by federal and some state laws. The many suffer limitations on account of a few who will not be good.—*Polk County.*

I have refrained from asking for a federal permit for the reason that I feel a certain odium attaches under the present unsettled state of the whole question and the cynical attitude of the general public mind toward doctors in this whisky muddle. It does not know the sheep from the goats.—*Kossuth County.*

I am giving up practice on account of the restrictions and would not be at work now if I could collect my money.—*Page County.*

I would suggest that all prescriptions for alcoholic beverages be written in triplicate: one copy to be retained by the prescriber, the other two to be forwarded to the pharmacist, who, having filled the prescription, should file one copy and forward the second to the prohibition director. Each prescription should contain the name of doctor, patient and druggist. By this means the officers would have exact data as to how much each physician was prescribing, how much each person was getting and how much was being dispensed, so that if any one was disposing of an unusual amount it could be investigated. By this means I feel that the permits and an endless amount of red tape could be dispensed with and less alcohol beverage prescribed.—*Poweshiek County.*

In my opinion there should be some method whereby alcoholic liquors could be obtained for legitimate use. The present method allows the soak to obtain a very impure supply, but the man who desires liquor for reasonable legitimate use cannot obtain any. Small, illegitimate stills are numerous.—*Fayette County.*

MICHIGAN

The prohibitory amendment to the state constitution went into effect on May 1, 1918. Under the state law any physician legally qualified to practice in the state may prescribe not to exceed 8 ounces of intoxicating liquors. The prescription must give the name and address of the patient, the number of prescriptions the physician has given the patient during the preceding year, the diagnosis of the condition for which the liquors are prescribed and a signed statement by the physician that the liquors are necessary for the health of the patient.

Questionnaires were sent to 1,751 physicians in Michigan, and 1,036, or 59 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: Detroit, yes, 145; no, 140; Grand Rapids, yes, 13; no, 25; Flint, yes, 9; no, 14; Lansing, yes, 5; no, 14; Saginaw, yes, 6; no, 8. Total for the cities: yes, 178; no, 201; for the rural districts, yes, 292; no, 353; for the state, yes, 470; no, 554.

RESULTS IN MICHIGAN

MICHIGAN	Detroit	Grand Rapids	Flint	Lansing	Saginaw	Total Cities	Rural	Grand Total
Number of physicians	1,551	273	115	102	72	2,113	2,480	4,593
Questionnaires sent	509	91	43	37	27	707	1,044	1,751
Questionnaires returned	288	39	24	19	14	384	652	1,036
Percentage of returns	55	43	56	51	52	54	62	59
General practitioners	214	23	18	15	10	280	580	860
Surgeons	34	8	3	2	2	49	28	77
Specialists	40	8	3	2	2	55	35	90
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?								
Yes	145	13	9	5	6	178	292	470
No	140	25	14	14	8	201	353	554
Do you regard beer as a necessary therapeutic agent in the practice of medicine?								
Yes	95	4	5	2	3	109	138	247
No	186	35	18	17	11	267	502	769
Do you regard wine as a necessary therapeutic agent in the practice of medicine?								
Yes	100	9	5	1	3	127	146	273
No	172	27	18	18	11	246	495	739
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?								
Yes	73	5	7	1	4	90	155	245
No	199	33	16	16	10	274	482	756
How many times have you found it advisable to prescribe these liquors in a month?								
Whisky: Number of physicians stating times advisable	89	8	7	3	7	114	196	310
Number of physicians stating no times advisable	148	27	14	13	5	207	369	576
Beer: Number of physicians stating times advisable	44	4	2	..	..	51	53	104
Number of physicians stating no times advisable	161	29	15	14	8	227	403	630
Wine: Number of physicians stating times advisable	54	1	4	1	1	61	60	121
Number of physicians stating no times advisable	157	29	15	7	7	223	453	676
Do you hold a federal permit?								
Yes	30	7	..	..	4	41	130	161
No	182	24	15	12	7	239	357	577
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?								
Yes (limit not specified)	42	8	4	4	3	61	123	184
Restricted absolutely	25	5	1	6	2	39	80	119
1 to 50 prescriptions	35	6	2	3	2	48	78	126
51 to 100 prescriptions	45	7	6	3	2	63	120	183
More than 100 prescriptions	10	..	..	..	..	10	6	16
Total	157	26	13	16	9	221	407	628
No restriction	121	12	10	3	4	151	222	374
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?								
Yes	150	30	14	14	9	217	416	633
No	127	9	9	4	4	153	209	362

On the question "Is beer a necessary therapeutic agent?" the vote was: Detroit, yes, 95; no, 186; Grand Rapids, yes, 4; no, 35; Flint, yes, 5; no, 18; Lansing, yes, 2; no, 17; Saginaw, yes, 3; no, 11. Total for the cities: yes, 109; no, 267; for the rural districts, yes, 138; no, 502; for the state, yes, 247; no, 769.

On the question "Is wine a necessary therapeutic agent?" the vote was: Detroit, yes, 109; no, 172; Grand Rapids, yes, 9; no, 27; Flint, yes, 5; no, 18; Lansing, yes, 1; no, 18; Saginaw, yes, 3; no, 11. Total for the cities: yes, 127; no, 246; for the rural districts, yes, 146; no, 493; for the state, yes, 273; no, 739.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 245; no, 756.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 310 had found it advisable to prescribe whisky, and 576 had not found it advisable; 104 had found it advisable to pre-

scribe beer, and 690 had not found it advisable; 121 had found it advisable to prescribe wine, and 676 had not found it advisable.

One hundred and sixty-one physicians of those replying stated that they held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 628 stated that they should be restricted, and 374 did not believe such restrictions necessary; 184 physicians answered yes, but did not specify a limit; 119 stated that the number should be limited to absolutely none; 126 considered from 1 to 50 prescriptions in three months sufficient, 183 considered from 51 to 100 satisfactory, and 16 physicians considered 100 insufficient.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 633; no, 362.

COMMENTS

I regard the price of whisky at the retail drugstores in Michigan as more prohibitive in the past three years than the law is prohibitive. The druggist holding a permit to fill the prescriptions charges the patient from $1.75 to $2 for 8 ounces of whisky or brandy. It seems to me it might be better all around and cheaper if the government could handle it and sell it to the patients having a prescription, through the postoffice, the same as they handle money orders and postage stamps. This would save several middlemen's profits, a great deal of clerical work and red tape, and still the government could be collecting as much revenue as ever from traffic.—*Belding.*

British Columbia has the best liquor law I have any knowledge of. It does prevent the liquor habit.—*Detroit.*

The physician should be given a permit to prescribe such alcoholics (the burden of proof of which should be his) in amounts commensurate with the needs of his practice. He should not be permitted to prescribe them for one addicted to their use, nor for any one not under his professional treatment, in the usual acceptance of the term. Violations of these provisions I would make punishable by fine, or suspension of license to practice, or both.—*Plymouth.*

The state of Michigan a few years ago adopted an amendment to its constitution whereby I, a legally qualified physician practicing within the state, am not allowed one single drop of pure alcohol on my drug shelves in my office. I cannot compound a single medicine that requires the use or addition of alcohol in its preparation. If I wish to dispense together a few fluidextracts that will not mix together well without the addition of more alcohol, I am prohibited by law from doing so. I could secure a manufacturer's or a druggist's license and then do so.—*Lenawee County.*

I regard the law as now enforced an injustice to the American public. In this locality they are drinking moonshine or any other thing with a "kick." I would regard a government store as much preferred.—*Bay City.*

The doctor should have a license number such as we have for narcotic prescriptions and checked up in case of determined illegitimate use.—*Bay County.*

Personally, I am a total abstainer—voted for prohibition, little thinking I should be annoyed by the difficulties to be experienced in using an honest judgment as to prescribing alcoholics. The druggists have been surrounded with such difficulties that they have all, in this vicinity, stopped handling alcoholics.—*Houghton.*

It would seem that the whole question of dispensation of liquors and narcotics could be easily handled by a system of municipal depots which could be cheaply maintained, and the narcotics, etc., could be prescribed for by the physician and thereby have both the people and the physician under a closer surveillance. This would not necessitate any expensive complex unavailing legislation and would take the handling of these articles out of the hands of the doctor and drugstore, because I do not believe any self-respecting physician wishes to have the present responsibility of handling these articles.—*Kalamazoo.*

I voted for prohibition to eliminate the saloon. I do not believe in the widespread drinking of moonshine which prevails today throughout the country, not only by the laboring classes, but by a large majority of our people, especially the younger generation, who will be senile at 40.—*Marquette County.*

The present law in regard to prescribing liquor is a failure because the druggists, in general, do not care to handle liquor; consequently, physicians are unable to have their prescriptions filled. In all the eastern part of the upper peninsula, there is only one drugstore I know of filling prescriptions for liquor in Escanaba. It costs $2 for the prescription and $3 a pint for liquor, making a total of $40 a gallon. On that basis, it is cheaper to drink moonshine whisky, and God knows the immense quantities consumed in the country, if I can judge by what is going around here in this town. In my opinion, the government itself should handle the liquor trade by establishing service stations in each township and distribute liquor by the measure, on prescription or not, to those people deserving it.—*Keston.*

Only one household in ten does not have liquor when I have ordered it, and in the exception it is generally the poor patient who is without it. But neighbors are always willing to supply it when they learn it is for sickness. In prescribing whisky in Michigan we are limited to 8 ounces every ten days, which the druggists generally are unable to supply and do not want to carry it on account of the red tape. The bootlegger supplies it cheaper, and it is consistent in quality. This is a regrettable state of affairs for which there seems to be no hope.—*Detroit.*

MONTANA

The prohibitory amendment to the state constitution became effective, Dec. 31, 1918. Legally qualified physicians holding permits from the federal government may record such permits with the secretary of state and may prescribe not more than 1 pint for one person within a period of ten days. Malt liquors containing more than one half of 1 per cent. of alcohol cannot be prescribed. Prescriptions must be written only after a personal examination or on the best information obtainable and the physician must state that the use of the liquor as a medicine is necessary.

Questionnaires were sent to 263 physicians in Montana; 192, or 73 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: yes, 109; no, 81.

On the question "Is beer a necessary therapeutic agent?" the vote was: yes, 55; no, 133.

On the question "Is wine a necessary therapeutic agent?" the vote was: yes, 82; no, 105.

RESULTS IN MONTANA

Number of physicians	670
Questionnaires sent	263
Total questionnaires received	192
Percentage of returns	73
General practitioners	172
Surgeons	10
Specialists	10
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?	
Yes	109
No	81
Do you regard beer as a necessary therapeutic agent in the practice of medicine?	
Yes	55
No	133
Do you regard wine as a necessary therapeutic agent in the practice of medicine?	
Yes	82
No	105
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?	
Yes	48
No	135
How many times have you found it advisable to prescribe these liquors in a month?	
Whisky: Number of physicians stating times advisable	91
Number of physicians stating no times advisable	45
Beer: Number of physicians stating times advisable	78
Number of physicians stating no times advisable	78
Wine: Number of physicians stating times advisable	61
Number of physicians stating no times advisable	61
Do you hold a federal permit?	
Yes	90
No	71
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?	
Yes (limit not specified)	48
Restricted absolutely	6
1 to 50 prescriptions	19
51 to 100 prescriptions	25
More than 100 prescriptions	1
Total	98
No restriction	86
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?	
Yes	115
No	70

Forty-eight physicians had seen cases of unnecessary suffering or death resulting from prohibition laws, and 135 stated that they had not seen such cases.

On the question as to the number of times physicians had found it advisable to prescribe whisky, 91 had found it advisable, and 45 had not found it advisable; 28 had found it advisable to prescribe beer, and 78 had not found it advisable; 61 had found it advisable to prescribe wine, and 61 had not found it advisable. Ninety-eight of those replying held federal permits; 71 did not hold federal permits.

Ninety-eight physicians believed that prescribing of alcohol should be restricted, and 86 believed that it should not be restricted. Forty-eight answered yes, but did not specify a limit; 6 believed in absolute prohibition; 19 believed from 1 to 50 in three months sufficient; 25 believed from 51 to 100 sufficient, and none considered the amount required to be more than 100 in three months.

One hundred and fifteen physicians voted for restriction, and 70 voted for no restrictions.

COMMENTS

The whole thing is beyond me. Out here if they don't get medicinal liquor they get moonshine. I tried to get along without a permit, but in case of sickness some of my patients thought they ought to have liquor and I would have to send them to my competitor to get their prescription. In a way the prescription work is a nice graft. It allows me to have an assistant. Two books a quarter for a year is 800 prescriptions, which at $2 each equals $1,600, nearly enough to pay his salary and allowing me to take postgraduate work, attend medical meetings and have more time for the enjoyment of the good things of life.—*Yellowstone County.*

The growing opinion in our community outside of the prohibition fanatics seems to be toward a system similar to the one in effect in Vancouver, where the government maintains a store where such liquors may be procured without the necessity of a prescription every ten days, thus eliminating the physician from the chance of abuse of privilege, providing a fund which will pay the war debt, and overcoming the bootlegger and the home brewer. No saloons or public drinking, but allowing every one the liberty they wish provided they are sane and wish to pay the bill.—*Bozeman.*

Hospitals should be permitted to have a definite quantity on hands for patients.—*Kalispell.*

Both the burden and the possibility of being asked to prescribe so that a householder may have a little whisky "in his house" should be removed by means of the householder being permitted to buy, say, a pint in six months or a year by personal visit to a government depot. —*Missoula.*

NORTH DAKOTA

The state prohibitory law went into effect on Nov. 21, 1885, so that North Dakota has been under prohibition for over thirty years. A special law approved, Feb. 18, 1921, forbids the prescribing or sale of liquor except as permitted by the federal law.

RESULTS IN NORTH DAKOTA

Number of physicians	556
Questionnaires sent	310
Questionnaires returned	193
Percentage of returns	62
General practitioners	170
Surgeons	10
Specialists	13
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?	
Yes	92
No	98
Do you regard beer as a necessary therapeutic agent in the practice of medicine?	
Yes	49
No	141*
Do you regard wine as a necessary therapeutic agent in the practice of medicine?	
Yes	56
No	134
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?	
Yes	54
No	131
How many times have you found it advisable to prescribe these liquors in a month?	
Whisky: Number of physicians stating times advisable	49
Number of physicians stating no times advisable	102
Beer: Number of physicians stating times advisable	25
Number of physicians stating no times advisable	119
Wine: Number of physicians stating times advisable	31
Number of physicians stating no times advisable	114
Do you hold a federal permit?	
Yes	11
No	61
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?	
Yes (limit not specified)	50
Restricted absolutely	2
1 to 50 prescriptions	18
50 to 100 prescriptions	25
More than 100 prescriptions	1
Total	106
No restriction	72
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?	
Yes	108
No	70

Questionnaires were sent to 310 physicians; 193, or 62 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: yes, 92; no, 98.

On the question "Is beer a necessary therapeutic agent?" the vote was: yes, 49; no, 141.

On the question "Is wine a necessary therapeutic agent?" the vote was: yes, 56; no, 134.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 54; no, 131.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 49 had found it advisable to prescribe whisky, and 102 had not found it advisable; 25 had found it advisable to prescribe beer, and 119 had not found it advisable; 31 had found it advisable to prescribe wine, and 114 had not found it advisable.

Eleven physicians stated that they held federal permits.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 106 stated that they should be restricted, and 72 did not believe such restrictions necessary; 50 physicians answered yes, but did not specify a limit; 2 stated that the number should be limited to absolutely none; 18 considered from 1 to 50 prescriptions in three months sufficient; 35 physicians considered from 51 to 100 satisfactory, and 1 physician considered 100 insufficient.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 103; no, 76.

COMMENTS

Of course, the argument can be easily made that restrictions on the physician as to what he shall prescribe are impudent impositions; but the physician has other restrictions, as to the quality of his preparation for practice, and as to his conformity to certain social standards. If the consensus of enlightened medical opinion is that alcoholics are not indispensable, then, in the interests of society, the dissenting physician may justly be restained from doing those things which society deems prejudicial. All orderly social progress demands conformity to major opinion until that opinion has been refuted by argument and scientific demonstration.—*Grand Forks.*

I am not in favor of the American saloon as it was running, but I think that light wines and beer served with meals under proper restrictions would do no harm. Whisky could be sold in sealed packages, as under the Gottenburg system. Why pass the buck to the medical profession?—*Grand Forks.*

I think that pure alcohol should be more readily available for laboratory uses, especially for drying pipets. Also that a good form of alcohol for external uses should be available, tax-free. The prices people have to pay now for "rubbing alcohol" are outrageous and almost criminal. The denaturing constituent should be such that the "rubbing alcohol" can also be used on the nipples and as a dressing for the cord in the new-born.—*Wells County.*

The physician should requisition the liquor from the U. S. bonded branch warehouse, and the physician should not charge for the prescription. The prescription should not be written until after a thorough physical examination of the patient, for which he should charge.—*Grand Forks.*

OHIO

Ohio adopted a state constitutional amendment providing for state-wide prohibition, Nov. 5, 1918; it became operative, May 27, 1919. Under the present law a legally qualified physician holding a federal permit may, on filing a copy of the permit with the state commissioner of prohibition, prescribe alcohol or alcoholic liquors not to exceed one-half pint in ten days for the aged, infirm and known sick.

Questionnaires were sent to 2,732 physicians in Ohio, and 1,666, or 61 per cent., were returned.

To the question "Do you regard whisky as a necessary therapeutic agent in the practice of medicine?" the replies were: yes, 721; no, 931. These replies were thus distributed: Cleveland: yes, 116; no, 107; Cincinnati: yes, 62; no, 65; Columbus: yes, 49; no, 58; Toledo: yes, 43; no, 42; Dayton: yes, 19; no, 30; Akron: yes, 25; no, 31; Youngstown: yes, 19; no, 21; Canton: yes, 9; no, 18; Springfield: yes, 5; no, 10; towns less than 50,000 and rural: yes, 347; no, 549.

To the question "Do you regard beer as a necessary therapeutic agent?" the replies were: yes, 328; no, 1,316. The total replies from cities of 50,000 or more were: yes, 150; no, 574. The replies from the rest of the state were: yes, 178; no, 742.

To the question "Do you regard wine as a necessary therapeutic agent?" the replies were: yes, 418; no, 1,222. These replies were thus divided: cities of 50,000 or more: yes, 206; no, 517; remainder of the state: yes, 212; no, 705.

The question "Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?" was answered: yes, 324; no, 1,288.

The number of physicians who reported that they had found it advisable to prescribe liquor was: Whisky, 535 advisable; 954 not advisable. Beer, 139, advisable; 1,278 not advisable. Wine, 201 advisable; 1,210 not advisable.

To the question "Do you hold a federal permit?" the replies were: yes, 349; no, 982.

To the question whether there should be any limit to the number of prescriptions for alcoholic liquors that a physician should write, 979 replied that there should be, and 616, that there should not. There were 271 who failed to specify the limit; 213 would restrict prescribing absolutely; 177 would limit prescriptions to from 1 to 50 in three months; 312 placed the limit at from 51 to 100 in three months, and 6 placed the limit above 100 in that time.

Opinions on the question whether physicians should be restricted in prescribing alcoholic liquors showed 1,014 for restrictions and 583 against restrictions.

I am not a rabid prohibitionist, but, in more than forty years' practice, have not found any case where, in my opinion, alcohol was really necessary. 'Tis not a food; 'tis not a medicine, and it only stimulates as a poison stimulates.—*Stark County.*

An active state medical board or other unprejudiced body (not prohibition agents) should decide whether this or any other special privilege is being abused.—*Cleveland.*

I do not possess a book in my library which does not recommend alcohol in some form for some disease or condition, and when I purchased them I did not buy them because they recommended the use of alcohol. We are certainly at present in the hands of fanatics.—*Ottawa County.*

Reasons for not taking out permit: I cannot see under the present working of the system, from what I know of it, how you can be honest to your patient, the government and yourself at the same time. I have consequently left it alone.—*Cincinnati.*

RESULTS IN OHIO

OHIO	Cleveland	Cincinnati	Columbus	Toledo	Dayton	Akron	Youngstown	Canton	Springfield	Total Cities	Rural	Grand Total
Number of physicians	1,246	863	546	423	284	274	173	101	86	4,066	4,066	8,092
Questionnaires sent	412	276	201	160	98	95	68	41	30	1,381	1,351	2,732
Questionnaires returned	226	128	107	85	50	56	40	27	15	734	932	1,666
Percentage of returns	55	46	53	53	51	59	59	66	50	53	69	61
General practitioners	164	80	66	58	37	39	29	19	11	502	858	1,360
Surgeons	21	14	10	12	6	6	4	4	1	78	26	104
Specialists	41	34	31	15	7	11	7	4	3	153	48	201
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?												
Yes	116	62	49	43	19	25	19	9	5	347	374	721
No	107	65	58	42	30	31	21	18	10	382	549	931
Do you regard beer as a necessary therapeutic agent in the practice of medicine?												
Yes	38	36	22	21	10	8	9	5	1	150	178	328
No	184	91	84	62	39	47	31	22	14	574	742	1,316
Do you regard wine as a necessary therapeutic agent in the practice of medicine?												
Yes	71	40	31	22	12	13	10	5	2	206	212	418
No	151	87	75	61	37	42	29	22	13	517	705	1,222
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?												
Yes	37	21	13	22	4	7	11	4	2	121	203	324
No	183	103	88	61	45	47	29	22	13	591	607	1,198
How many times have you found it advisable to prescribe these liquors in a month?												
Whisky: Number of physicians stating times advisable	105	39	38	32	15	12	18	7	3	269	266	535
Number of physicians stating no times advisable	90	70	57	48	31	37	20	20	11	384	570	954
Beer: Number of physicians stating times advisable	9	9	5	11	3	5	5	3	..	50	89	139
Number of physicians stating no times advisable	177	99	76	64	41	44	31	24	14	570	708	1,278
Wine: Number of physicians stating times advisable	25	12	14	12	7	8	6	2	1	87	114	201
Number of physicians stating no times advisable	157	98	68	63	38	41	30	25	13	528	682	1,210
Do you hold a federal permit?												
Yes	97	30	30	18	5	4	9	3	1	197	152	349
No	104	73	54	52	33	40	22	19	10	407	575	982
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?												
Yes (limit not specified)	38	11	10	15	4	7	6	7	2	100	171	271
Restricted absolutely	11	8	11	8	6	6	6	5	..	61	152	213
1 to 50 prescriptions	27	12	14	5	3	8	3	4	..	76	101	177
51 to 100 prescriptions	57	29	22	21	14	9	9	3	2	166	146	312
More than 100 prescriptions	...	...	...	...	...	...	...	...	...	....	6	6
Total	133	60	57	49	27	30	24	19	4	403	576	979
No restriction	86	58	40	31	23	26	15	7	4	290	326	616
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?												
Yes	133	62	66	52	29	34	26	19	11	432	582	1,014
No	84	53	33	31	30	30	13	5	4	383	200	583

COMMENTS

Whisky as a medicine is fine, as a beverage it is absolutely unnecessary.—*Butler County.*

I voted for prohibition and regret it now because it has caused, in many instances, the opposite of what had been hoped for.—*Columbus.*

I have not found it necessary to write prescriptions as it is easier for my patients to procure the liquor themselves.—*Trumbull County.*

I voted "dry" hoping for intelligent government and proper use of alcoholics. I regret the fanatic is in complete power.—*Columbus.*

The Ohio State Legislature passed a law limiting the amount of whisky to eight ounces every ten days. I considered this very inadequate, of no use to my patients, so I surrendered my permit.—*Cleveland.*

I am not a prohibitionist, and never refused a drink if I cared to, but my opinion is that liquor is hard enough on a well man and it is absolutely foolish to give it to a sick one.—*Erie County.*

After many years in the practice of medicine I have decided that the transient effect of alcoholic liquors in disease is a detriment rather than a benefit.—*Marion County.*

If I had a federal permit it would be of no use to me as there is no place within a hundred miles that I know of that alcohol or whisky could be obtained.—*Washington County.*

No greater injustice has been done the American physician than has resulted from this prohibition wave or what I deem the false interpretation of the Volstead Act. It was never intended that alcohol was to be denied the physicians and manufacturers of medicine for physicians' prescription.—*Wayne County.*

I consider the present prohibition law a failure. Although I have a federal permit I can not get a prescription filled at any of our drugstores, but I can buy all the "boot-leg" whisky (not fit for medicinal use) I want for from $4 to $18 a quart. Our newspapers are advocating prohibition and advertising stills. [The doctor enclosed one of the advertisements.—Ed.]—*Ashtabula County.*

Let us not, as physicians, lower the standard of our profession by prescribing a remedy that does more harm than good.—*Gallia County.*

I have lost thousands of dollars because of prostituted lives caused by the open saloon; now the old booze gang would like to make a goat of the medical profession to atone for the loss to them of the saloon. They would like to produce an outlet for whisky, beer and wine by way of the medical profession, in spite of the Constitution and law and order. My children do not now need to pass an open saloon on their way to school. They used to be compelled to pass three in as many blocks. I am opposed to helping the liquor interests in any way, shape or form.—*Butler County.*

PENNSYLVANIA

Pennsylvania has no state laws regarding the prescribing of alcoholic liquors.

Questionnaires were sent to 4,430 physicians in Pennsylvania, and 2,575, or 58 per cent., were returned.

On the question "Is whisky a necessary therapeutic agent?" the vote was: Philadelphia, yes, 455; no, 221; Pittsburgh, yes, 177; no, 118. Total for the cities, yes, 766; no, 456; for the rural districts, yes, 648; no, 682; for the state, yes, 1,414; no, 1,138.

On the question "Is beer a necessary therapeutic agent?" the vote was: Philadelphia, yes, 215; no, 453; Pittsburgh, yes, 60; no, 235. Total for the cities, yes, 353; no, 861; for the rural districts, yes, 258; no, 1,069; for the state, yes, 611; no, 1,930.

On the question as to whether physicians should be restricted in the number of prescriptions for alcoholic beverages, 1,226 stated that they should be restricted, and 1,245 did not believe such restriction necessary; 338 physicians answered yes, but did not specify a limit; 185 stated that the number should be limited to absolutely none; 228 considered from 1 to 50 prescriptions in three months sufficient; 451 considered from 51 to 100 satisfactory, and 24 physicians considered 100 insufficient.

On the question "Should physicians be restricted in prescribing alcoholic beverages?" the vote was: yes, 1,221; no, 1,257.

COMMENTS

Ten years ago I used whisky in septic cases. I stopped it and have noticed no difference in results. Alcohol has no place in medicine; it is simply a beverage.—*Pittsburgh.*

RESULTS IN PENNSYLVANIA

PENNSYLVANIA	Philadelphia	Pittsburgh	Scranton	Reading	Harrisburg	Wilkes-Barre	Erie	Allentown	Johnstown	Altoona	Lancaster	Chester	Bethlehem	Total Cities	Rural	Grand Total
Number of physicians	3,467	1,231	708	162	159	147	147	112	103	85	80	70	63	6,034	5,314	11,348
Questionnaires sent	1,224	491	68	55	60	55	57	45	45	32	30	26	18	2,216	2,214	4,430
Questionnaires returned	681	288	32	23	29	28	37	22	25	17	15	18	10	1,225	1,340	2,575
Percentage of returns	56	61	47	42	48	51	65	49	56	53	50	69	56	56	60	58
General practitioners	500	236	23	20	21	19	31	18	17	9	9	16	10	919	1,224	2,143
Surgeons	65	37	5	1	2	2	2	2	4	3	2	1	..	122	35	157
Specialists	116	40	4	2	6	7	4	1	4	5	4	1	..	194	81	275
Do you regard whisky as a necessary therapeutic agent in the practice of medicine?																
Yes	455	177	23	11	13	18	18	13	13	1	6	10	8	766	648	1,414
No	221	118	9	12	16	10	18	8	12	16	8	6	2	456	682	1,138
Do you regard beer as a necessary therapeutic agent in the practice of medicine?																
Yes	215	60	17	3	9	13	9	9	6	..	2	4	6	353	258	611
No	453	235	15	20	20	14	27	12	19	17	12	13	4	861	1,069	1,930
Do you regard wine as a necessary therapeutic agent in the practice of medicine?																
Yes	290	96	22	8	11	9	9	9	7	1	3	7	4	476	341	817
No	369	198	9	14	18	17	26	12	17	16	11	10	6	723	983	1,706
Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?																
Yes	135	39	7	5	7	6	7	4	3	1	..	3	4	221	195	416
No	510	248	24	16	22	21	32	17	22	16	14	15	6	963	1,113	2,076
How many times have you found it advisable to prescribe these liquors in a month?																
Whisky: Number of physicians stating times advisable	363	145	29	7	8	12	16	8	7	4	4	7	5	608	526	1,132
Number of physicians stating no times advisable	194	110	6	12	15	11	15	10	13	13	8	9	3	439	604	1,024
Beer: Number of physicians stating times advisable	70	23	9	2	2	5	5	2	..	..	..	1	2	121	85	206
Number of physicians stating no times advisable	265	193	12	19	20	18	25	13	18	14	11	14	5	727	929	1,656
Wine: Number of physicians stating times advisable	140	52	12	5	4	2	7	15	1	..	..	2	..	240	134	374
Number of physicians stating no times advisable	315	171	12	16	18	21	24	11	17	14	11	13	7	650	873	1,523
Do you hold a federal permit?																
Yes	356	157	13	7	11	13	17	9	5	3	2	7	3	603	570	1,173
No	233	97	15	11	16	13	16	10	18	12	10	8	6	465	649	1,114
The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?																
Yes (limit not specified)	92	36	..	1	4	2	4	3	1	2	5	1	2	153	185	338
Restricted absolutely	18	9	..	2	2	1	7	2	3	..	1	1	..	46	139	185
1 to 50 prescriptions	34	21	3	1	3	2	3	1	..	7	..	2	..	77	151	228
51 to 100 prescriptions	115	68	6	6	6	4	6	3	3	3	2	4	1	227	224	451
More than 100 prescriptions	9	3	..	1	..	..	..	..	..	..	..	1	..	14	10	24
Total	268	137	9	11	15	9	20	9	7	12	8	9	3	517	709	1,226
No restriction	384	144	22	11	14	10	16	10	18	4	6	7	7	662	584	1,246
In your opinion, should physicians be restricted in prescribing whisky, beer and wine?																
Yes	239	141	8	10	14	10	18	11	10	12	8	7	3	491	730	1,221
No	406	141	24	12	13	17	18	10	14	3	6	11	7	684	573	1,257

On the question "Is wine a necessary therapeutic agent?" the vote was: Philadelphia, yes, 290; no, 369; Pittsburgh, yes, 96; no, 198. Total for the cities, yes, 476; no, 723; for the rural districts, yes, 341; no, 983; for the state, yes, 817; no, 1,706.

On the question whether physicians had witnessed unnecessary suffering or death from enforcement of the prohibition laws, the replies were: yes, 416; no, 2,076.

On the question as to the number of times physicians had found it advisable to prescribe alcoholic beverages per month, 1,132 had found it advisable to prescribe whisky, and 1,024 had not found it advisable; 206 had found it advisable to prescribe beer, and 1,656 had not found it advisable; 394 had found it advisable to prescribe wine, and 1,523 had not found it advisable. In Pennsylvania, 1,123 physicians of those replying stated that they held federal permits.

Knowing the physiologic and toxicologic action of alcohol, I have always felt I served patients best without alcohol in any form as a therapeutic agent.—*Pittsburgh.*

Distilled liquor is a "necessity" and still more frequently "advisable." I do not think that a sufficient number of the medical profession are "crooked" to result in any important degree in the nullification of the intent of the Volstead Act.—*Philadelphia.*

The "privilege" (of prescribing alcohol) adds another to the many disagreeable duties imposed on the conscientious physician. It turns many of his patients to unscrupulous confréres. The physician who believes in the therapeutic merit of alcohol should be unrestricted in its use. He should, however, be required to submit a clinical report of those cases wherein alcohol is prescribed.—*Pittsburgh.*

Restrictions cannot be too strict for the good of the profession as well as the public, for the physician who practices for revenue rather than for the good of his patient. The physician who really thinks alcohol indicated in a certain case is not likely to be greatly handicapped. If all physicians were honest there would be no need for restrictions.

The more generally the profession assists in enforcement, the more reasonable will the restrictions become.—*Athens.*

It would be advisable to take liquor out of the druggists' hands entirely. Have it handled by the government. In this way if a patient needs liquor a better product at a more reasonable price could be secured and the government would have absolute control.—*Pittsburgh.*

The great majority of qualified physicians can be trusted to prescribe alcohol as they are trusted to prescribe other remedies, without restriction, but those who abuse such privilege should be taken care of by the law.—*Philadelphia.*

Therapeutics cannot and should not be regulated by law. Nor should scientific questions be discussed or decided upon other than scientific grounds. Men of criminal tendencies, or those who would prostitute their science in order to evade the law, should not be allowed to practice medicine. Men who appreciate their responsibilities to their patients, to the public health, to the profession, and to the science of medicine, should not be hampered in their use of any and every agent or method that may to them seem desirable in any particular instance, whether for the treatment of the sick or for the prevention of disease.—*Philadelphia.*

I have never seen a single instance where alcohol was required in the treatment of disease. Personally, I would favor laws prohibiting the manufacture of alcohol in any form for internal use. I do not, however, favor any law unless provisions are made and executed for their enforcement.—*Clark's Summit.*

I am a teetotaler. However, I recognize that alcohol is a good servant but a bad master, and this can be said of other habit-producing drugs.—*Montgomery County.*

I am now 81 years of age. I have been in the active practice of medicine ever since 1866 (55 years). Have not found it necessary to use alcoholic or brewed liquors in any case. I answer No to Questions 8 and 9 because I think no reputable physician should be restricted in what he believes to be necessary to relieve sickness or prevent death.—*Meyersdale.*

For more than twenty years I have never permitted my patients to take any form of alcoholic liquor. I greatly disapprove of its employment both from observation and theoretically. It is an evil, and no conscientious and consistent physician who takes time to consider the subject or has at heart the all round good of his patients and community can do other than resent the assumption that he might believe it in any way other than harmful.—*Kane.*

Marriages

WALLACE L. OBCUTT, West Newbury, Mass., to Miss Ora E. Drake of Haverhill, Mass., at Boston, December 15.

JAMES P. WARREN, San Francisco, to Miss Beatrice McClaskey of Berkeley, Calif., December 20.

WILLARD ALONZO CHIPMAN, Madison, Wis., to Miss Isabel Arnold of Dorchester, Mass., December 13.

BENJAMIN D. LUCK, Pine Bluff, Ark., to Miss Wordna Clements of Little Rock, November 15.

EDWIN VARNER LONG to Miss Jessie Crawford, both of Sunnyside, Utah, December 12.

JOHN HENRY GOSNELL to Miss Marie Lammer, both of Seattle, October 24.

REX F. SWARTZ to Miss Prudence Plummer, both of Seattle, recently.

Deaths

James Magee Dentley ● Cincinnati; University of Cincinnati College of Medicine, Cincinnati, 1911; member of the Central States Pediatric Society; served in Mexico as captain of the First Ohio Field Hospital Corps and during the World War; formerly assistant professor in pediatrics, University of Cincinnati; member of the faculty of the College of Pharmacy; member of the Cincinnati Academy of Medicine; member of the Association of Military Surgeons; served in the pediatric department of the Cincinnati General Hospital; died, December 12, at Baltimore, aged 34.

Eugene Woodbury Hill, Taholah, Wash.; University of Maryland School of Medicine, and the College of Physicians and Surgeons, Baltimore, 1886; formerly government physician on the Coeur d'Alene, Blackfoot and Quiniault Indian reservations; was given the Roosevelt bronze medal for service in Panama; at one time vice president of the Medical Association of the Isthmian Canal Zone; formerly on the staff of the Chinese Detention Hospital, Malone, N. Y.; died, December 14, at Tacoma, Wash., aged 56.

● Indicates "Fellow" of the American Medical Association.

James Cowper Shelton ● Chillicothe, Mo.; St. Louis College of Physicians and Surgeons, St. Louis, 1889; specialized in ophthalmology, otology, laryngology and rhinology; at one time president of the city board of education; secretary-treasurer of the Livingston County Medical Society; state examiner for the blind; was taken ill in his automobile, December 5, and died at the Chillicothe Hospital, from chronic nephritis and uremia, aged 59.

Albert Carl Kimberlin ● Indianapolis; Medical College of Indiana, Indianapolis, 1888; professor of clinical medicine, Indiana University School of Medicine, Indianapolis; at one time president of the Indiana State Medical Association and the Marion County Medical Association; died, December 14, when he was accidentlly shot through the temple while on a hunting expedition, near Osgood, Ind., aged 58.

William M. Knapp, Hope, Idaho; St. Louis Medical College (Washington University), St. Louis, 1872; practitioner for nearly half a century; Civil War Veteran; former member of the Nebraska state legislature; for four years professor of medicine, University of Nebraska; formerly superintendent of the Nebraska Hospital for the Insane, Lincoln; died, November 16, from senility, aged 74.

Erwin George Linkman, Milwaukee; Marquette University School of Medicine, Milwaukee, 1913; member of the State Medical Society of Wisconsin; served as lieutenant, M. C., U. S. Army, during the World War; member of the staff of the Emergency Hospital, Milwaukee, where he died, December 14, from injuries received in an automobile accident, December 11, aged 29.

Leander Morton Farrington, Manchester, N. H.; Medical School of Harvard University, Boston, 1894; member of the Massachusetts Medical Society; member of the medical advisory board during the late war; assistant, clinical medicine, Tufts College Medical School, Boston; dropped dead in his office, December 11, from heart disease, aged 48.

Andrew J. Simpson, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of Ohio Wesleyan University, Cleveland, 1898; health officer of South Newburg; formerly house physician, St. Alexis Hospital, and superintendent of the Detention Hospital; died, December 7, after a lingering illness, aged 44.

William Card Harmount, Pittsburgh; Atlantic Medical College, Baltimore, 1909; senior staff surgeon of the Homeopathic Hospital; served with the British expeditionary forces in France as regimental surgeon during the late war, with rank of captain, received the British Military Cross; died suddenly, December 8, aged 37.

Nathaniel L. Rogers, Wickcliffe, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1890; member of the Kentucky State Medical Association; county health officer; at one time president of the Ballard County board of health; died, December 16, from chronic nephritis, aged 58.

John D. Tucker, Newcastle, Pa.; Jefferson Medical College, Philadelphia, 1900; member of the Medical Society of the State of Pennsylvania; affiliated with the State Tuberculosis Dispensary since its establishment; died, December 11, from strangulated hernia, aged 48.

Henry John Bergold, Brooklyn; New York University Medical College, New York City, 1871; practitioner for half a century; for twenty-five years visiting physician to St. Mark's Hospital, Manhattan; died, December 20, from arteriosclerosis, aged 72.

John J. Rinehardt, Chaonia, Mo.; Barnes Medical College, St. Louis, 1903; member of the Missouri State Medical Association; died, December 8, at the St. Francis Hospital, Cape Girardeau, Mo., from septicemia, following the extraction of three teeth, aged 44.

Clarence G. Wilson, St. Mary's, Pa.; Jefferson Medical College, Philadelphia, 1873; practitioner for nearly half a century; member of the Medical Society of the State of Pennsylvania; county coroner; died, December 11, from influenza, aged 73.

Herbert Lee Constable, New York City; Medical Department of the University of the City of New York, 1889; member of the Medical Society of the State of New York; died suddenly, December 18, from heart disease, aged 55.

Oscar B. Kirkpatrick, Cherry Fork, Ohio; Miami Medical College, Cincinnati, 1886; member of the Ohio State Medical Association; president of the county board of health; died, November 18, from nephrolithiasis, aged 65.

Jacob G. Michael, Mobile, Ala.; Medical College of Virginia, Richmond, 1860; practitioner for nearly half a century; proprietor of the Hygeia Hotel, Citronelle; died, December 12, following a long illness, aged 81.

William Simonton Pack, Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1889; member of the South Carolina Medical Association; died, December 12, following a long illness, aged 60.

George Washington Foster, Georgetown, Texas; Tulane University of Louisiana, New Orleans, 1869; practitioner for more than half a century; died, November 28, from disease of the prostate gland, aged 87.

Alexander David McCrackin, Kellogg, Idaho; University of Michigan, Ann Arbor, 1909; member of the Idaho State Medical Association; died, November 11, from a self-inflicted gunshot wound, aged 38.

Charles Asbury Roark, Hagerstown, Ind.; Medical College of Indiana, Indianapolis, 1903; died, December 13, at the Reid Memorial Hospital, Richmond, Ind., following an operation for gallstones, aged 51.

William Orpheus Cattron, Pekin, Ill.; Hahnemann Medical College and Hospital of Chicago, 1876; member of the Illinois State Medical Society; died, December 8, following an attack of hiccup, aged 69.

Richard Henry Hanson, Hartville, Mo. (license, Missouri, 1883); formerly a clergyman; died, November 28, from injuries received when he was struck by an automobile, aged 79.

Charles Lewis Beach, Hartford, Conn.; New York Homeopathic Medical College and Flower Hospital, New York City, 1872; died, December 15, after a lingering illness, aged 73.

Benjamin H. Markle, Reading, Pa. (license, Pennsylvania, 1893); practitioner for nearly half a century; veteran of the Civil War; died December 11, from senility, aged 83.

Lynn Keen Blakeslee, Pendleton, Ore.; Hahnemann Medical College and Hospital of Chicago, 1883; died, in November, at St. Anthony's Hospital, Pendleton, aged 64.

Charles Bradley Doane, Boston; Dartmouth Medical School, Hanover, N. H., 1895; died, December 19, at the Massachusetts General Hospital, Boston, aged 50.

Marvin W. Vandenburg, Mount Vernon, N. Y.; New York University Medical College, New York City, 1879; veteran of the Civil War; died, December 8, aged 78.

John S. Jenkins, Lima, Ohio; Eclectic Medical Institute, Cincinnati, 1875; died suddenly from heart disease, while driving his automobile, December 8, aged 71.

Oscar Krueger, San Antonio, Texas; Louisville (Ky.) Medical College, 1907; member of the State Medical Association of Texas; died, December 9, aged 40.

Harry S. Martin ● Spokane, Wash.; Victoria University Medical Department, Toronto, Ont., Canada, 1884; died, December 11, after a long illness, aged 65.

Samuel A. Henderson ● Jackson, Tenn.; Vanderbilt University Medical Department, Nashville, 1884; died, December 14, from septicemia and malaria, aged 59.

Edward E. Kerr, Chattanooga, Tenn.; Northwestern University Medical College, Chicago, 1887; died, December 6, from hemorrhage of the stomach, aged 66.

Ashley Scovel, Yonkers, N. Y.; Medical College of the State of South Carolina, Charleston, 1885; died, December 10, at St. John's Hospital, Yonkers, aged 60.

Hiram F. Abbott, Rumford Point, Me.; Bowdoin Medical School, Portland, Me., 1864; died recently, at the Augusta State Hospital for the Insane, aged 86.

Morton A. Pratt, Wichita, Kan. (license, Kansas, 1901); died, November 28, in a local hospital, from injuries received in an automobile accident, aged 80.

Charles B. Johnson ● Batavia, Ill.; Rush Medical College, Chicago, 1892; also a druggist; died, December 13, from asthma and lung trouble, aged 54.

John D. Wolfe, Mount Vernon, Iowa; State University of Iowa, College of Medicine, Iowa City, 1889; died, October 4, at Cedar Rapids, Iowa, aged 60.

Irving P. Truman, Skaneateles, N. Y.; Homeopathic Hospital College, Cleveland, 1870; died, December 3, at Lakeland, Fla.

Adelbert D. Puterbaugh, Branford, Fla.; Kentucky School of Medicine, Louisville, 1893; died, November 11, aged 57.

Correspondence

"CAMPHORATED OIL" TUMORS

To the Editor:—Enough has been written of late to acquaint the profession with the fact that the injection of liquid petrolatum into tissues is sometimes followed by "tumors," and that since it has been camphor that is most commonly incorporated with the liquid petrolatum, such tumors have come to be known as "camphorated oil tumors." It is perfectly obvious, however, that injections of other substances similarly incorporated could be followed by the same sort of lesion.

That it is the liquid petrolatum and not the medicament that is responsible for the tumors can be inferred from the fact that the histology of the liquid petrolatum tumors is almost identical with those that have long been known as paraffinomas. Nevertheless, Miss Marjorie S. Jeffries has taken the pains recently to produce experimentally in the University of Pennsylvania Laboratory of Dermatological Research liquid petrolatum tumors in two monkeys, running control injections. That is, some injections were of liquid petrolatum only, whereas others in the same animal were of liquid petrolatum containing camphor. The result in the two cases was the same: development in eight months of tumors in both positions, the size in some cases of soup beans. The histology of these was the same as that which has been already fully described by several authors.

My real purpose here is to point out that oil is being extensively used today intramuscularly as a vehicle for mercuric salicylate and perhaps other insoluble drugs. I do not wish to be an alarmist, and cannot submit any experimental or clinically proved data on actual mercury injection cases; but such do not seem necessary after what has been already experienced in the matter of the camphor oil tumors. Of course it would appear to be the logical thing to attempt the experimental production of tumors in the lower animals by injection of a liquid petrolatum suspension of mercury salts; but it takes a long time to produce the tumors, and in the meanwhile the oil is being injected into hundreds of patients daily. The proper course under the circumstances would seem to be meanwhile to use some other vehicle for the mercury, and insist that the proprietary drug house specify that "no paraffin or petrolatum product is contained in this ampule." In the case I have in mind all the information given on the wrapper in this respect was that the vehicle was a "bland, nonirritating base," and on correspondence that it was an "oil of animal origin." I centrifuged the mercuric salicylate from one of the ampules, and the oil is optically identical with liquid petrolatum. It does not react to osmic acid, and I can guarantee that there was no olive oil in the mixture that I tested.

It will, of course, at once occur that after all these years of insoluble mercury salts injection, some of these tumors ought to have cropped out. But it must be recalled that it is not always liquid petrolatum that has been used as a vehicle, and that even when it is used, not every person will develop liquid petrolatum tumors. There is no doubt that many more liquid petrolatum-camphor injections have been given than have camphorated oil tumors developed, and we have confirmed this in our experimental monkeys. One of the monkeys showed only three or four tumors out of a dozen or more foci injected. With the other monkey, every one of the twelve foci into which liquid petrolatum was injected was followed by the development of a "tumor." There must be a certain individual factor determining whether these "tumors" shall or shall not develop.

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Be all this as it may, there must still remain a smaller or larger residue of patients liable to these tumors; why they have not been complained of in the buttocks I cannot say. Maybe they have. But, as stated above, when there are other available "suspenders," it is logical for the physician to decline to use any preparation unless it is specified that it contains no paraffin or petrolatum product.

FRED D. WEIDMAN, M.D., Philadelphia.

QUINIDIN TREATMENT OF AURICULAR FIBRILLATION

To the Editor:—The three interesting papers on the quinidin treatment of auricular fibrillation, together with the editorial (THE JOURNAL, Dec. 3, 1921), will probably stimulate the wide use of the drug, in spite of your editorial cautions and Hamburger's "warning against the use of quinidin as a general therapeutic procedure for the treatment of various types of disorderly heart rhythm." Hewlett and Sweeney, in discussing the sudden death of one patient in fairly good compensation shortly after the establishment of a normal rhythm, say, "Should further deaths of this type be reported, the field of usefulness of quinidin will be restricted." And in a footnote they add: "Since this article was written, a patient in fairly good compensation was treated with quinidin and died suddenly shortly after his heart had become regular."

Apropos of this, the following case may be cited: A man, aged 50, vaguely ill for six months, suddenly developed palpitation and marked shortness of breath, June 6, 1921. He was admitted to the Hahnemann Hospital, June 8, in a state of cardiac decompensation and auricular fibrillation. The heart was excessively irregular and about 130 a minute. The pulse deficit was 14. June 9, he received a preliminary dose of 0.4 gm. (6 grains) of quinidin sulphate. June 10, 11 and 12, he was given 0.4 gm. of quinidin three times a day. In the afternoon of June 12, his heart was beating regularly and normally at 81 a minute. On the morning of June 13, his apex beat was 81 and his radial pulse 78, due apparently to extrasystoles. He was given three more doses of 0.4 gm. of quinidin that day. The total amount of quinidin taken was 5.2 gm. (80 grains). At 5 p. m., the intern, Dr. Guillium, made the following notes: "Patient comfortable this afternoon; apparently no adverse symptoms. Pulse strong but not as full as June 11. Extrasystoles about 8 in a minute, but they get through and there is no pulse deficit. Pulse 80." At 6:30 p. m., the patient, propped up by two pillows, was comfortably reading the evening paper. Suddenly he dropped the paper and began kicking and twitching. The intern, arriving in a few minutes, found him unconscious with heart very slow and weak. Six minutes after the beginning of the seizure he was dead. Necropsy was not obtainable.

The terminal clinical phenomena impressed us as those of cerebral embolism, and the death certificate was made out accordingly. It was with considerable interest, therefore, that we read the letters (referred to by Hamburger) of J. Mackenzie and J. Orr warning of the tendency to embolism in auricular fibrillation and flutter, especially on resumption of normal rhythm. Mackenzie refers to three or four instances in which the restoration of normal rhythm was succeeded by the discharge of clots from the normally contracting auricle and fatal cerebral embolism. Their patients had not received quinidin. Whether this was true in our case is not certain, but in the use of a new remedy such occurrences should be recorded so that an accurate estimate of the drug's usefulness and dangers may be speedily reached.

S. W. SAPPINGTON, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NUFORAL

To the Editor:—Would you kindly give me your opinion upon Nuforal, a pamphlet on which is being circulated under the heading "A New Treatment for Tuberculosis," from the Nuforal Laboratories, 686 Lexington Avenue, New York. Is this an ethical concern?

WILLIAM C. VOORSANGER, M.D.,
The Oaks Sanitarium, Los Gatos, Calif.

To the Editor:—Enclosed please find literature from Nuforal Laboratories, Inc. Since they give the impression that the Department of Health of the City of New York recognizes their treatment I shall be glad to know where this firm and their product really stand.

J. P. KANE, M.D., Tacoma, Wash.

To the Editor:—I am just in receipt of some literature from "Nuforal Laboratories, Inc., 686 Lexington Ave., New York City." I presume it will not be long before some of this literature comes to the hands of our patients and I will be beset by inquiries from them as to this alleged remedy for tuberculosis. This literature includes what is said to be a reprint of an article published in the September number of *American Medicine*, which journal we do not take. The article was written by Dr. Euthimios H. L. Tchor-Baj-Oglu. I assume you are familiar with the propaganda being carried on with the Nuforal outfit, and I wish you would kindly give me such information as you have concerning their alleged remedy, themselves and their doings.

J. G. PACE, M.D., Medical Director and Superintendent,
Modern Woodmen Sanatorium for Tuberculosis, Woodmen, Colorado.

ANSWER.—From the information in our files it seems evident that the use of "Nuforal" as a treatment for tuberculosis is a commercial proposition, and that the treatment is distinctly in the experimental stage. The Nuforal Laboratories, Inc., has not requested an examination of its product by the Council on Pharmacy and Chemistry, nor has the Council so far given consideration to "Nuforal."

So far as the medicament is concerned, the only statement of composition which appears to have been given out is to the effect that the "ingredients contained in the product are formic acid, nucleinic acid and allyl sulphate." As no quantities are given the statement is meaningless.

LOCAL TREATMENT IN DIPHTHERIA

To the Editor:—What is the latest, approved, local treatment for diphtheria affecting the throat (*a*) when there is only an infection from the Klebs-Loeffler bacillus and (*b*) when there is a mixed infection?

B. J. READ, M.D., Red Jacket, W. Va.

ANSWER.—There is no approved treatment of diphtheria through local measures alone. The only treatment generally approved is by diphtheria antitoxin. Local measures may be used to add to the patient's comfort and to combat secondary infections. Irrigations, gargles, etc., may be employed to wash away decomposing secretions and fragments of pseudomembrane which may obstruct the pharynx and nasopharynx. They should be unirritating. For this purpose, physiologic solution of sodium chlorid is as good as any. Hot gargles of sodium bicarbonate solution, about 1 dram to a pint (8 gm. to a liter) seem to reduce the swelling and so give some relief to the patient. Solutions of antiseptic substances in sufficient strength to be bactericidal appear to be of doubtful value either in the active stage of diphtheria or in getting rid of the bacilli during convalescence.

DEFINITION OF MORON

To the Editor:—Kindly inform me of the derivation of the term "moron," when first used and recent literature regarding same.

EDWARD A. FOLEY, M.D., Chicago.

ANSWER.—Moron is derived from *μωρός*, dull, stupid, the same word that appears in the second half of the familiar word "sophomore." In 1910, the American Association for the Study of the Feebleminded adopted as authoritative this terminology: Feebleminded: idiots, mental age below 2; imbeciles, between 2 and 7; morons, between 7 and 12. Nearly a thousand titles to articles on feeblemindedness in its social aspects are given by L. W. Crafts in the *Journal of Psycho-Asthenics*, Monograph Supplements, Volume 1, No. 3, March, 1917, published by the Minnesota School for Feeble-Minded and Colony for Epileptics, Faribault, Minn.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 10. Chairman, Dr. Samuel W. Welch, Montgomery.

CALIFORNIA: Los Angeles, Feb. 13-16. Sec., Dr. Charles B. Pinkham, 342 Flood Bldg., San Francisco.

DISTRICT OF COLUMBIA: Washington, Jan. 10. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

HAWAII: Honolulu, Jan. 9. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

ILLINOIS: Chicago, Jan. 10-12. Director, Mr. W. H. H. Miller, Springfield.

INDIANA: Indianapolis, Jan. 10. Sec., Dr. Wm. T. Gott, Crawfordsville.

KANSAS: Topeka, Feb. 14. Sec., Dr. Albert S. Ross, Sabetha.

NATIONAL BOARD OF MEDICAL EXAMINERS. Written examination in Class A medical schools, Part I, Feb. 15-17; Part II, Feb. 20-21. Sec., Dr. John S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEW MEXICO: Santa Fe, Jan. 9-10. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, Syracuse and New York City, Jan. 23-26. Asst., Professional Examinations, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Jan. 10-11. Sec., Dr. J. M. Byrum, Shawnee.

SOUTH DAKOTA: Pierre, Jan. 17. Director, Dr. H. R. Kenaston, Bonsteel.

VERMONT: Burlington, Feb. 14. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Olympia, Jan. 10. Director, Mr. Fred J. Dibble, Olympia.

WEST VIRGINIA: Charleston, Jan. 10. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: Madison, Jan. 10-12. Sec., Dr. John M. Dodd, 220 E. Second St., Ashland.

A VISIT TO A CHIROPRACTIC SCHOOL

GEORGE DOCK, M.D.
ST. LOUIS

Criticism of medical sects or medical sectarians by a physician is of dubious value. Sectarians will accuse him of bias, of working "pro domo," and many disinterested persons will do the same. Few in the profession have an opportunity of seeing the work of sectarians, and so I have prepared this article, based on a visit I made in the spring of 1921, as well as on a rather thorough study of catalogues.

Certain important facts seem not sufficiently realized. The details of belief in or practice of a medical dogma form the smallest part of the problem of sectarian medicine. A much more serious thing is the possibility of developing schools and graduating low grade practitioners of medicine in large numbers; of carrying a great but insidious advertising campaign; of giving a large part of the population false but attractive ideas of physiology and hygiene; of complicating and corrupting medical practice laws, already sufficiently handicapped.

An essential feature, often overlooked, is the fact that, no matter how pure a dogma any irregular school may have in the beginning, it rapidly takes up all the methods of medical practice so far as its means permit. Yet the students and graduates of such schools are not counted in estimating the number of students and physicians for statistical purposes. If the reader thinks I am mistaken as to the future of these schools, I would point out that the homeopaths, within a few years and when their dogmas have been forgotten, now have all the standing of regular graduates, including admission to the government services. Osteopaths have some schools that compare favorably in equipment and course with those of the lower grade medical schools of a few years ago. The reader should not forget that we need more good medical schools, but not more poor ones. Chiropractic remains as a comparatively pure dogma, but there can be little doubt that in a few years it will take up the equipment and methods of the regular schools as far as it is able and have nothing but the prestige of the name, the separate licensing bodies, the considerable body of alumni and the peculiar methods of advertising to differentiate it from regular schools.

The misunderstandings about the situation were impressed on me during the campaign for a separate chiropractic examining board in Missouri in the legislative session of 1921. In the hearing before the Senate committee it was depressing but also amusing to hear the sectarian misstatements. The legislators were assured that chiropractors did not practice medicine, but in the next breath were told how they cure all kinds of diseases in very large numbers of patients. The misstatements about comparatively elementary facts that were made would hardly be believed by any one who did not hear them, and yet such was the skill of the advocates of chiropractic that it was the impression of a number besides myself that if the matter had been put to a vote of the large and representative audience, the chiropractors would have won by a great majority. The common misunderstanding was again revealed when a number of us went to a hearing before the governor. The question was seriously asked by intelligent people whether osteopaths and chiropractors should not be allowed to practice in cases for which they have a special capacity. I had known before how hard it is for people to understand that none of the practitioners of these sects possess any therapeutic secret by reason of their training, and while some individuals among them may have skill in some line, it is purely individual and not the result of sectarian teaching or practice. Contrary to a common belief, the osteopath is not likely to be a good masseur or bone setter, or to perform miracles, and still less the chiropractor.

My experience with sick persons who had been in the hands of chiropractors had given me a very poor impression of that sect; but with the intention of getting a more definite idea of the subject I visited the "fountain head" of chiropractic, "the mother school"; namely, the Palmer School, of Davenport, Iowa, in the spring of 1921. I went without announcing myself, in company with a friend very familiar with medical study and medical schools, and I will give as accurate a picture as possible of what we saw and heard. I do not wish to convey the idea that I consider myself an authority on chiropractic study or teaching, but wish to give a truthful account of a very large source of supply for those who appear like physicians. It is true, in a sense, that the method of study followed and the methods of practice inculcated are not worth the consideration of intelligent people; yet the fact that more than 3,000 potential voters spend a number of months and several hundred dollars apiece in getting the so-called training in a single school is a matter worth the consideration not only of physicians, but also of hygienists, economists, psychologists and jurists.

BUILDINGS AND EQUIPMENT

The buildings of the school are modest in comparison to the size of the classes, but are rapidly expanding. The home of the president is the first thing one sees on approaching the institution. The house looks as if it might have been built originally for a Davenport magnate in the seventies, with a recent addition around the side, giving it a very spacious and comfortable appearance. In the rear is a frame garage, originally no doubt a stable, with some Japanese bronze storks, looking rather incongruous, at the entrance. Next to a neat "memorial building" used for classes are the headquarters of the school, in an old building, partitioned off into numerous small rooms and narrow corridors, with a glass-fronted addition, which serves as a lobby. In the latter is a news stand, conducted by a blind man, who also sells bones, especially vertebrae, for from $20 a set up. In the middle of the day, part of the space is occupied by a number of women, who sell cakes and sandwiches. Beyond this is a large building containing a cafeteria, with a roof garden seating 1,500, and next to it a concrete building said to have 7 acres of floor space.

The secretary's office, just inside the old building, is hardly large enough to turn around in; but the secretary, a very genial and energetic man, gives an air of expansiveness and hospitality to the premises. Nearby is a small room used as a book store, but with very few books for sale.

At certain times in the day a tour of the institution is conducted by a very enthusiastic guide. The main demonstration is the "osteological laboratory," a small room almost filled with cases containing many remarkably fine specimens of bone lesions, especially kyphosis, scoliosis, spondylitis deformans, caries and repair of diseased or broken vertebrae, ribs and other bones, and a few comparative anatomic specimens. The guide explains the theory of chiropractic by means of the narrowed foramina in the scoliotic specimens, showing how the "vital force" that should go through the nerves has difficulties. He also talked much about the "innate mind," which he was confident was wholly independent of the body.

The cafeteria, which is said to be capable of feeding 1,200 people in an hour, has many individual effects in construction, such as a well with an "old oaken bucket," rustic trimmings and many mottoes of the same kind that ornament some other parts of the buildings. They preach a Hubbardesque philosophy in rather wearisome aphorisms. Another striking effect is produced by colossal busts of the founder, D. D. Palmer, of the son "B. J.," and of the wife of the latter, often spoken of as "Mabel," who introduces a much needed pulchritude into the scheme.

There are many class-rooms. These are for the most part large, seating from 300 to 500. Some of them are in a loft building, and the class-rooms open into one another so that one may have to go through one or two classes to get to the one desired. These rooms are all flat, with low ceilings. The seats are numbered, and the attendance of each class is checked up by girls who go from row to row and note empty places, very few as a matter of fact.

In a room on the ground floor are machines for practicing the "chiropractic thrust." These are made of pieces of gas-pipe with a cap on top and a fairly strong spring inside them. The machines are used at odd times as well as by classes, and one can see many students through the day getting the "form" that is the essential part of the treatment. The "thrust," "a quick spontaneous (!) thrust, with the hand upon the bony process of misalined vertebrae," is made by placing the pisiform bone of one hand over the cap, or vertebra, in the patient, then putting the other hand around the wrist, with as much care as one sees in young golf players, and then pushing down the hand with a vigorous thrust. The only other thing that could be considered a laboratory is a small roentgen-ray installation labeled "Spinograph Department," where a special course is given for one month, at a charge of $50.

In one of the buildings is a printing establishment, "The Prettiest Printing Plant in America," and there is also a "Private Branch Post-Office and Express Service."

STUDENT BODY

In speaking before the Senate committee, Dr. Palmer claimed 3,000 students. At my visit in April the usual statement was 3,200, with the frequent addition that within a few months there would be 5,000. These are said to come from all over the world, including such diverse countries as Bulgaria and New Zealand. "With one exception, its doors are open to all races" (catalogue). The large majority look as if they had come from the smaller towns or villages of the Middle West, and vary greatly in age. While the majority are young men and young women, there are not a few middle aged men and a considerable number of women, not merely of certain age, but certainly aged. One striking thing about these students is the friendliness, earnestness and conviction of all. They show no objection to the appearance of a stranger; speak enthusiastically of the work; recommend treatment; answer questions freely, and are as attractive a body of students as I have ever encountered. It was not difficult to discover, however, that most of them had not bridged the stage between the grammar school and the course that in medicine leads to the doctor's degree. The farm, the barber-shop and the hotel dining-room or kitchen would seem to be the more natural work places for a great many. Some, however, seem to have come from the teacher's platform, and a few from normal schools or small colleges.

TEACHERS AND TEACHING

"About one hundred and fifty regular full-time, salaried employees" are "engaged in the work of our many departments" (catalogue).

I went from class-room to class-room, and from these one would never realize that the chiropractor had anything to do with medicine as a biologic science. There is no laboratory study or teaching. The nearest approach to medical study probably is in the anatomic lecture room, so-called. This is conducted by Mrs. Palmer, "pleasantly styled his Better Two-Thirds, the wife of Dr. Palmer" (catalogue). In her class-room were at least 300 students as counted by seats, all filled. Much might be said of Mrs. Palmer personally. She commands the class through her presence and personality, and is urbane but energetic in manner. The exercise of the day consisted in a parrot-like recitation of the names of all the veins from the toes to the heart. Questions were put to one student after another in the numbered seats. Rather more than half of them indicated that they could not answer the questions, and sometimes half a dozen in a row would miss the same question. There was no thought of anatomic relations, function or anything more than names. Although the teacher evidently had memorized the names without omission of any, no matter how unimportant, she gave the impression of being either self-taught or taught by an inexperienced teacher. Her pronunciation was quite lawless, so that she might begin pronouncing words like posterior, saphenous or azygos in a conventional manner, but if a student mispronounced it she would then take up the new way—"Oh yes, 'saph' enous,' 'pŏsterior.'" etc. She would frequently help out the answers when the responses were too slow by repeating a lot of names, such as: "O yes! then, muscular, cutaneous and articular." The catalogue states that work in dissection may be taken at times, but members of the class said they had never seen it, and some said that dissection was illegal in Iowa (not a fact).

A great feature in the school is the "pit lecture," so-called, given by the head, familiarly spoken of as "B. J." The lecture room, which has about 600 seats, was filled, with a large part of the standing room occupied. There is a stage running across one end on which were a number of patients and assistants. The exercise was extremely interesting. A patient would be brought to the front of the stage and the history read. This gave about as much as is included in the primary complaint in an ordinary history, for example: "sour stomach, deafness, insomnia"; "rheumatism of shoulder"; (a young man) "mentally exhausted and physically rotten, has to take exercise to keep from getting worse." The diagnosis was announced without any further examination; sometimes by a member of the audience, and consisted in a rapid-fire statement of a given vertebral dislocation. Sometimes, when the professor announced the diagnosis, a voice from the rear would say, "Why not such and such vertebrae?" "Why so?" inquired the teacher. "Because it gives so and so." The teacher would good naturedly add this to the diagnosis.

The spirit in all classes was very interesting to see. Great good nature and hilarity were displayed in all the rooms. Even in the pit lecture there was much noise and coughing and laughing and even talking. The manner of the president was usually jocular, sometimes quite familiar. After a bad but pardonable guess at an old woman's age he gave the next one correctly, at which a voice from the audience called, "Did you see the paper, B. J.?"

Another interesting exercise was a treatment clinic. This was also in a very large room with a stage, and on the stage and front part of the floor were chiropractor treatment tables. These are so arranged that there is an open space between the two parts of the table; the patient lying with the chest on the upper one and the hips on the lower one. At the Senate hearing I understood Dr. Palmer to say that they had 3,000 patients in the clinic daily. In Davenport, however, the number was usually given as 1,700. Many of these are members of the class. The names and apparently the diagnoses are entered in books, and the clinic treatment is the whole thing in most cases; but in a few, a fleeting palpation of the spine was made. Out of several hundred people the day I was there, there was only one who looked as if he might be sick—a man with a severe kyphosis and paraplegia. Many of the "patients" looked remarkably well, having very much the appearance of the people one can see at Christian Science meetings plus the pink skin and plump panniculus revealed at the treatment clinic and quite different from those in any outpatient department. That the treatment gives a certain satisfaction one could note by the expressions of many of the patients, who had an appearance almost of ecstasy from the moment of lying down on the table.

While the actual method of chiropractic treatment may be well known, I will describe what I saw. The patients come prepared to have the back exposed. The men have their shirts on backward. To the women, with the present style of dress, it was a simple matter to expose the part of the back necessary: in some cases all from the lumbar region up. On certain days so-called "coccygeal adjustments" are given. I happened to be there on the off day, but can imagine the situation.

The patient lying down, a rapid palpation is sometimes made, very often in fact none at all, as the site to be treated is already known; then the left hand is arranged for the thrust, the other hand fastened around the wrist, and a rapid push downward is made, the whole thing taking much less time than it takes to describe. A girl student sitting next to me, who said she had often been adjusted, said the palpation and thrust had no particular local effect, such as tickling. Those who imagine that the treatment is used only for local diseases should hear the recommendation of the effects in general malaise, as from being up too late at night; the value of the treatment for workmen, and its use in blindness, deafness, cancer of the stomach and liver, smallpox, measles, influenza, etc.

INCONSISTENCIES

There is a curious contradiction between political statements about the course and the facts. Before the Senate committee it was frequently stated that the course was one of three years of six months each. In Missouri House Bill No. 113, providing for a state board of chiropractic examiners, it is stated that the candidate must be "a graduate of a chiropractic school or college which teaches a course of not less than three years of six months each, or its equivalent." Many wondered what the students did in the intervening six months' period. As a matter of fact, there is no such period; the session is eighteen months continuously, but new terms begin every four months. According to the Palmer catalogue, students get from "six to twelve months' actual practice." The catalogue, p. 33, says: "The course is divided into eighteen consecutive calendar months comprising three collegiate years of six months each, all of which are continuous, there being no vacation periods." This somewhat original treatment of time extends to the school hours. There are said to be 4,103½ class hours in the scientific course, or with the spinographic course of 1,189 hours and the salesmanship course, 5,335 class hours. This would seem to exceed the hours in a four year medical course, except that a chiropractic hour is not an hour, but a half hour.

The freshman course is four months. "After two months in sophomore class they are entered as sophomore adjusters, and at the end of eight months are promoted to junior class and entered as junior adjusters. . . . After being promoted to junior adjusters, students are granted permission to solicit patients outside of clinic, which cases they may adjust for pay" (catalogue, p. 19).

Before the Senate committee it was stated that chiropractors do not treat obstetric cases, and in House Bill 113 obstetrics is not named among the subjects taught. The catalogue states (p. 23) that "obstetrics is taught sufficiently to qualify the student to pass any of the state examining board's examinations in midwifery in any state where this is required. . . . Antiseptic precautions" are taught, yet much was said in the Senate hearing about the time wasted by medical students in learning about poisonous drugs, which chiropractors never use.

Gynecology is taught, though not provided for in House Bill 113, and it is said (catalogue, p. 27) that a great proportion of cases of this character enter into the average chiropractor's practice.

A course in salesmanship is included in the course, for "despite the merit of an offering, the individual may not be successful because of his personal inability to sell it" (catalogue, p. 31). The synopsis of this course is interesting, but too long to quote (catalogue, p. 32).

FINANCIAL ASPECTS

As the fee for the course for a single person is $350 "spot cash," $400 for deferred payment (not less than $150 initial payment, the balance at interest), or husband and wife $437.50 and $500, respectively, it can be seen that the industry is an important one from the financial standpoint. This is not mentioned as essentially bad, but it must have some bearing on the whole movement for organizing irregular schools.

How precarious the business may be appeared from a visit to another chiropractic school in Davenport, with a beggarly array of empty benches. I have mentioned in another place [1] the tendency for such institutions to move between two days to another town, sometimes another state. But one institution with 3,000 students paying large fees can easily carry on an extensive propaganda, as by full page advertisements in city papers, meetings, defense of chiropractors tried for breaking practice laws by corps of attorneys, and in hearings before legislatures.

CONCLUSION

So one must question, whether, as stated in a court decision, chiropractic is an innocent business. No one can object if a healthy or sick star, either of the opera, stage or screen, a novelist, a critic or an editor, a banker, a merchant, a physician, a society leader or an athlete wishes to be adjusted. The case is different in a child with measles, diphtheria or meningitis, a pregnant woman, or a patient with a malignant tumor. When we think of this it seems important that up to last winter chiropractors claimed that fifteen states and one territory have chiropractic boards, not insisting on med-

1. Dock, George: Physicians and Healers, South. M. J. 11:1 (Jan.) 1918.

ical training; that eight states give legal recognition, and that twelve supreme courts hold that "drugless healers" are not practitioners of medicine. But, as I intimated in the beginning, the matter is not one to be settled by physicians, so I shall omit further discussion.

Kansas October Examination

Dr. Albert S. Ross, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 11-12, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. Seventeen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Washington University	(1920)	89.7, (1921)	90.1
University of Vienna	(1902)*		86.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgia College of Eclectic Medicine & Surgery	(1914)		Missouri
Kentucky University Medical Department	(1903)		Missouri
University of Louisville Medical Department (1912) Kentucky	(1900)		Colorado
Johns Hopkins University	(1915)		Virginia
Barnes Medical College	(1909)		Missouri
Central Medical College of St. Joseph	(1899)		Missouri
Ensworth Medical College	(1905)		Oklahoma
St. Louis University School of Medicine (1912), (1917), (1918), (1920)			Missouri
Washington University	(1920)		Missouri
John A. Creighton Medical College	(1920)		Nebraska
Woman's Medical College of Pennsylvania	(1910)		Penna.
Meharry Medical College	(1909)		Texas
Vanderbilt University	(1919)		Tennessee

* Graduation not verified.

New Hampshire September Examination

Dr. Charles Duncan, secretary, New Hampshire State Medical Board, reports the written examination held at Concord, Sept. 8-9, 1921. The examination covered 11 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 5 candidates examined, 3 passed and 2 failed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College	(1921)*		89.7
Tufts College Medical School	(1921)		75.2
University of Pennsylvania	(1920)		83.2

College	FAILED	Year Grad.	Per Cent.
Laval University	(1916)		41.7
Osteopath			67

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Medical School of Maine	(1905)		Maine
Boston University	(1898)		Mass.
Harvard University	(1912)		Mass.
Tufts College Medical School (1908), (1919) Massachusetts	(1898)		R. Island
Columbia University	(1901)		New York
Jefferson Medical College	(1913)		Vermont
University of Vermont	(1910)		Vermont
Laval University	(1919)		Maine

* This candidate has finished the medical course, and will obtain the M.D. degree after he has completed a year's internship in a hospital.

Pennsylvania July Examination

Miss Mary Y. McReynolds, director, Bureau of Medical Education and Licensure of Pennsylvania, reports the written and practical examination held at Philadelphia and Pittsburgh, July 5-9, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 255 candidates examined, 238 passed and 17 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1920)		84
Howard University	(1919) 75, (1920)	75,	77.6
Chicago College of Medicine and Surgery	(1917)		79
Rush Medical College	(1886)		77.5
Bowdoin Medical School	(1918)		83.6
Johns Hopkins University	(1920)		81.2
University of Maryland	(1920)		84.8
Boston University	(1918)		77.5
Harvard Univ. (1900) 85, (1918) 78.6, (1919) 81.2, (1920)			86.2
University of Michigan Medical School	(1920) 75, 78.6,		83.8
Columbia University	(1910) 77.5, (1917)		78.6
Cornell University	(1911)		82.5
New York Medical College and Hospital for Women	(1917)		84.4
University Bellevue Hosp. Med. College	(1919) 87.2, (1920)		84.6
Western Reserve University	(1920)		79.8
Hahnemann Medical Coll. and Hosp. of Philadelphia (1920) 75, 75, 75.4, 77.2, 77.4, 77.4, 78.6, 79, 79.2, 80.4, 80.4, 80.8, 81, 81, 81.6, 81.8, 82, 82.4, 82.6, 83.4, 83.8, 85	(1917)		77.2,
Jefferson Medical College (1916) 75, (1917) 75, (1919) 75.6, 76, 77.2, 82.4, 83.4, 83.4, 88.8, (1920) 75, 75, 75, 75, 75, 75.2, 75.8, 76.2, 76.4, 76.4, 76.8, 77, 77, 77, 77.2, 77.6, 77.6, 77.6, 77.6, 77.8, 77.8, 77.8, 77.8, 78.4, 78.4, 78.4, 78.6, 78.8, 79, 79.2, 79.4, 79.4, 79.4, 79.6, 79.8, 80.2, 80.2, 80.6, 80.8, 81, 81.2, 81.6, 81.8, 82, 82, 82.4, 82.4, 82.8, 82.8, 83.2, 83.6, 83.8, 83.8, 83.8, 83.8, 83.8, 83.8, 84.8, 85.2, 85.2, 85.8, 86.2, 86.4, 86.4			75,
Temple University (1917) 83, (1918) 75.4, (1919) 75.6, 76, 77.2, 82.4, 83.4, 83.4, 88.8, (1920) 75, 76.8, 80.2, (1920) 75, 75.4, 78.2, 78.6, 79, 80.2, 80.4, 80.8, 81, 81.6, 81.8, 82.2, 85.4			75,
University of Pennsylvania (1919) 87.6, (1919) 76.2, 81, 81.4, 83.2, 85.4, 85.6, 87.8, 88.2, (1920) 76.8, 76.8, 77.2, 77.6, 78, 78.2, 78.4, 78.4, 78.6, 79, 79, 79.2, 79.2, 79.2, 79.6, 79.6, 80.4, 80.4, 80.8, 80.8, 81, 81.2, 81.2, 81.2, 81.2, 81.4, 82, 82.8, 83.2, 83.6, 83.8, 84, 84, 84.2, 84.2, 84.4, 84.4, 85, 85.2, 85.4, 87, 87.4, 87.6, 87.8, 88, 88.2, 89.6	(1918)		85.2,
University of Pittsburgh (1919) 76.6, 77, 77.6, 78.8, 79.6, 79.8, 80.2, 81.4, 81.4, 81.6, 81.8, 82, 82.2, 82.2, 82.4, 82.6, 82.8, 83, 83.2, 83.4, 84.6, 84.8, 84.8, 85.4, 85.4, 85.6, 86.6, 87.2, 88.4	(1920)		76.2,
Woman's Medical College of Pennsylvania (1920) 81.6, 82.2, 82.4, 83.4, 86	(1919)		83,
Vanderbilt University	(1913)		77.8
University of Texas	(1919) 79.4, (1920)	84.6,	85.8
University of Naples	(1911)*		75
University of Rome	*		75

College	FAILED	Year Grad.	Number Failed
Kentucky School of Medicine	(1893)		1
University of Louisville Medical Department	(1911)		1
Leonard Medical School	(1909)		1
Cleveland Medical College	(1895)		1
Pulte Medical College	(1900)		1
Jefferson Medical College	(1920)		4
Medico-Chirurgical College of Philadelphia	(1915)		1
Temple University	(1919, 2), (1920, 2)		4
University of Naples	(1917)*		1
University of Padua	(1917)*		1
University of Central Spain	(1916)*		1

* Graduation not verified.
† No year of graduation given.

Michigan October Examination

Dr. Beverly D. Harison, secretary, Michigan State Board of Registration in Medicine, reports the written examination held at Lansing, Oct. 11-13, 1921. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Fourteen candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University	(1921)		78.7
Chicago College of Medicine and Surgery	(1917)		79.4
Loyola University	(1918)		78.9
Northwestern University	(1921)	80.9,	82.8*
Johns Hopkins University	(1921)		85.9
University of Pennsylvania	(1913)		83.9
University of Pittsburgh	(1920)		83.1
McGill University	(1920)		83.7
University of Toronto	(1920)		82.8
University of Vienna	(1914)†		81.7
University of Budapest	(1917)†		76.8
University of Rome	(1920)†		76.8
Medical School of the American Univ. of Beirut	(1907)†		80.5

* This candidate has finished the medical course, and will obtain the M.D. degree after he has completed a year's internship in a hospital.
† Graduation not verified.

Montana October Examination

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, Oct. 4-6, 1921. The examination covered 10 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 10 candidates examined, 9 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University	(1921)		83.1
Rush Medical College	(1917)		82.6
State University of Iowa College of Homeo. Med.	(1903)		78.4
University of Louisville Medical Dept.	(1921)		77.5
University of Maryland	(1920)		82.8
University of Minnesota	(1921)		80.2
St. Louis University School of Medicine	(1921)	77.6,	80.1
John A. Creighton Medical College	(1919)		83

College	FAILED		
Medical College of Virginia	(1918)		68.3

Book Notices

ATLAS FOR ELECTRO-DIAGNOSIS AND THERAPEUTICS. By F. Miramond de Laroquette, M.D., Médecin Principal, Chef des Services d'Electro-Radiologie de l'Afrique du Nord à Alger. Authorized Translation by Mary Gregson Cheetham, Dame Infirmière Militaire. Foreword by Robert Knox, M.D., Hon. Radiographer King's College Hospital. Cloth. Price, $4.50. Pp. 180, with 52 illustrations. New York: Paul B. Hoeber, 1921.

First, the translation of the title is wrong. It should be "Atlas of Electrodiagnosis and Physiotherapy." There is considerable space given to matter not pertaining to electricity; e. g., fifty-eight pages on articulations. The book is made up of plates, fifty-two of them, with descriptive text. Some of the plates are purely anatomic, having nothing directly to do with electrodiagnosis or physiotherapy, and are mere repetitions of standard anatomic illustrations. Many are excellent cuts of muscles and nerves, showing the motor points of muscles and where the nerves are most accessible. There is a very good table of the electric excitability of nerves and muscles, but the faradic excitability is expressed in terms of centimeters on a standard French machine and is consequently of little practical value, except in relativity. The figures and text on the joints are of no especial value to a physician with a library, and are useless for a layman. The illustrations are handy for quick reference, but the work is too limited in scope for the general practitioner, who will be better served by one of the several manuals on electrodiagnosis and electrotherapy already in circulation. For the nurse or layman doing electric work it will serve as a reliable and very useful guide—under proper supervision. The translation is only fairly well done. It shows lack of medical knowledge and of familiarity with the English equivalents of anatomic and electric terms.

APPLIED COLLOID CHEMISTRY. General Theory. By Wilder D. Bancroft, Professor of Physical Chemistry at Cornell University. Cloth. Price, $3. Pp. 245. New York: McGraw-Hill Book Company, Inc., 1921.

This book is the first of a proposed series on colloidal chemistry, and deals specifically with the general theories rather than with their application in industries and sciences. The nature and laws of absorption, surface tension, colloidal solution, emulsion and foam formation are discussed in a clear, brief manner, with a minimum of mathematics and a maximum of elucidation. Most of the cases selected for illustration are taken from industrial chemistry, but many are from everyday life, and they help maintain the reader's interest. The biologic and medical applications receive no special consideration. As a statement of the general theories of colloidal chemistry, which is all it pretends to be, this book is a reliable and altogether readable exposition. An equally well prepared and up-to-date companion volume on colloid chemistry in biology and medicine would be an invaluable addition to the literature of these sciences. We hope it may follow soon.

PRACTICE OF MEDICINE. Edited by Frederick Tice, M.D., Professor of Medicine and Clinical Medicine, and Head of the Department of Medicine, University of Illinois, College of Medicine. In ten volumes. Volumes V, VI and VII. Leather. Price, $115 per set. Hagerstown, Maryland: W. F. Prior Company, Inc., 1921.

The incomplete fifth volume contains articles by Wolfer on rat-bite fever and glanders, and by Woody on anthrax, Bartley on tetanus, Fricks on Rocky Mountain spotted fever, Bass on hookworm disease, Byfield on Hodgkin's disease and Whitman on diseases due to nemathelminths and arthropods. Cooke treats of allergic coryza and bronchial asthma, Jermain of diseases of the lung, and C. P. Emerson of diseases of the pleura. The articles as a whole seem to us somewhat above the standard of those that have appeared in previous volumes. We have been especially attracted by the articles on Rocky Mountain fever, Hodgkin's disease and hookworm disease, though more critical examination might show that others were fully as deserving of praise.

The sixth volume is incomplete. It contains a good article by Warfield on diseases of the arteries—arteriosclerosis, thrombo-angiitis obliterans, aortitis, aneurysm, coronary thrombosis, etc. There is a brief but comprehensive and practical discussion of clinical blood pressure. Acute endocarditis is discussed by H. G. Webster. The picture of the malignant type is none too clearly drawn. The table showing the characteristics of the principal endocardial murmurs is fragmentary and would be more suitably placed in the chapter on chronic valvular disease where, in fact, all these points are repeated. T. F. Reilly handles the subject of chronic valvular disease of the heart and handles it well. We are pleased to note that under the head of treatment he prescribes hope for his patients. He truthfully says: "It is one of the best medicines. . . . It is surprising what a beneficial effect hopeful announcements have on the cardiac patient." There is a short chapter on heat exhaustion by L. C. Johnson, and a full consideration by Schereschewsky of morbid conditions due to changes in barometric pressure—compressed air illness and mountain sickness. Seventy-five pages are devoted to a discussion by Soutter of diseases of the bones and joints. The chapter can hardly be regarded as satisfying whether considered from the standpoint of internal medicine, general surgery or orthopedics, because the descriptions are of such a meager, quiz-compend character. About half the space of this chapter is taken up by illustrations, many of them, however, quite helpful. Hoover has a short article devoted to diseases of the muscles. He cites several illustrative cases from his own experience.

The seventh volume is likewise incomplete. There is a short chapter on diseases of the salivary glands by Joachim, and one on stomatitis by J. S. Davis. Joachim also writes on diseases of the pancreas. A long chapter, but no longer than the subject warrants, on diseases of the liver, gallbladder and biliary ducts is by John and W. Ewart Ferguson. A good article on jaundice by C. A. Elliott makes unnecessary the ten pages devoted to the same subject by the Fergusons.

A MANUAL OF SELECTED BIOCHEMICAL METHODS, AS APPLIED TO URINE, BLOOD AND GASTRIC ANALYSIS. By Frank P. Underhill, Ph.D., Professor of Pharmacology and Toxicology, School of Medicine, Yale University. Cloth. Price, $3 net. Pp. 232. New York: John Wiley & Sons, Inc., 1921.

This manual is the outgrowth of a course in biochemical methods given by the author in the Yale University School of Medicine. It makes no claim to originality, the methods having been compiled from various sources. The fields of urine, blood and gastric chemical analysis are completely covered, the methods selected being admirable and those generally adopted by the best workers in these fields. It is pleasing to note that practically all of these methods have been originated in the United States. The descriptions of the methods follows those of the original literature. The arrangement of the methods is excellent, and the make-up of the book good. This work should find wide adoption in medical schools, by physicians and by general laboratory workers.

DIE PHYSIKALISCHEN UND TECHNISCHEN GRUNDLAGEN DER MESSUNG UND DOSIERUNG DER RÖNTGENSTRAHLEN. Von Dr. rer. nat. et phil. Friedrich Voltz, physikalischer Assistent der Strahlenabteilung der Universitätsfrauenklinik, München. Paper. Price, 96 marks. Pp. 300, with illustrations. Berlin: Urban & Schwarzenberg, 1921.

This is an exceedingly technical presentation of the problem of physics of the roentgen ray. The book is filled with minute descriptions of many of the phases of this subject. It will be of greatest value to the engineer engaged in roentgen-ray work. It is so technical that the average roentgen worker will find it difficult to follow. Its technical value is unquestioned, but as a practical treatise it can hardly be said to offer much to the average roentgenologist.

A LABORATORY HANDBOOK FOR DIETETICS. By Mary Swartz Rose, Ph.D., Associate Professor Department of Nutrition, Teachers College, Columbia University. Revised edition. Cloth. Price, $2.10. Pp. 156. New York: The Macmillan Company, 1921.

The revised edition of this well known dietetic manual reflects the advances that have been made in the science of feeding during the last ten years; the book is well arranged and serves its purpose as a laboratory textbook excellently. It may well be used as a textbook in training medical students in the art of feeding patients, as this particular phase of teaching has been rendered more difficult than necessary because of the difficulties in comprehending the fundamental scientific basis of diets.

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Medicolegal

Roentgenograms as the Best Evidence

(Daniels v. Iowa City (Iowa), 183 N. W. R. 415)

The Supreme Court of Iowa, in affirming a judgment in favor of the plaintiff for damages for personal injuries, says that error was assigned on the refusal of the trial court to permit the defendant's expert to testify as to what appeared in the roentgen-ray photographs of the plaintiff's injured leg. The photographs themselves were the best evidence of what appeared on them. To sustain the defendant's contention as to the roentgen-ray photographs in question, the supreme court would necessarily reverse its holding in *Elzig* v. *Bales*, 135 Iowa, 208, 112 N. W. 540, and *Lang* v. *Light, Power & Ry. Co.*, 185 Iowa, 940, 170 N. W. 463. Whatever criticism may be directed against the rule announced in the foregoing cases, the record showed that this expert was permitted to testify as to what roentgen-ray photographs show, how they are taken, how things are indicated thereon, and his physical examination of the plaintiff. The supreme court appreciates that too strict an application of the best evidence rule as applied to roentgen-ray photographs is not desirable, but it could not be said under the instant record that any prejudice resulted in sustaining the objections to the questions propounded. It is proper for an expert to explain a roentgen-ray photograph in such particulars that are not understood by a layman. What the jury could see and understand about the matter is not the subject of expert testimony, and this the supreme court understands to be the effect of its prior decision. A roentgenogram may be used for purposes of demonstration by an expert as if he had the object itself before the jury for explanation. That the bone can be distinguished from the flesh in a roentgen-ray photograph, and that the bone would make a heavier shade than the muscle is proper expert testimony. Such scientific facts would not be known by the average layman.

Liability for Burns from Fluoroscopic Exposures—Care Required

(Evans v. Clapp et al. (Mo.), 231 S. W. R. 79)

The Kansas City (Mo.) Court of Appeals affirms a judgment for $5,000 damages for the plaintiff, against the defendants, a physican and a hospital company, for alleged malpractice in the use of a fluoroscope, resulting in a burning of the plaintiff, who claimed that twenty exposures were made within eight days, while the physician insisted there were only eight exposures. The plaintiff had gone to him to ascertain the cause of headaches from which she suffered, and on the first examination with the fluoroscope he found it to be a fallen or low-lying stomach. Because the roentgen rays were not applied in this case for purposes of treatment, but merely to ascertain the cause of the plaintiff's headaches, which was disclosed at the first examination, the court says that there was no room for the application of any theory of mere honest mistake in the careful application of a treatment intended to be applied in the accomplishment of a result similar to the one produced but not to the extent thereof. On the contrary, the roentgen ray was to be used only to discover a condition which was at once shown, and the many other exposures were not made in the interest of the patient, but for other purposes, some of them being made for a young physician and others to see.

Examinations, when carefully and properly made, do not produce burns; hence when a burn is produced, this fact is of itself some evidence from which the jury may find that the degree of care and skill ordinarily exercised by persons of like profession and using such agencies was not exercised in that particular case.

Of course, the rules governing the duty and liability of physicians and surgeons in the performance of professional services are applicable to them in the use and manipulation of a roentgen-ray machine. In applying this dangerous agency, they must use such reasonable and ordinary care, skill and diligence as is ordinarily possessed by others in the same line of practice and work in similar localities. It would seem that the ordinary care required in the use of the roentgen-ray agency, a dangerous thing if not properly used, would not be quite subject to the distinction usually made between ordinary medical practice in a rural and in a city community, for the standard of care in the use of roentgen-ray machines must be derived from among the users thereof, and the term "similar localities" must, in this connection, have a somewhat general and relative meaning so as to include other users of such machines who possess the ordinary proficiency in, and acquaintanceship with, the use of that agency which obtains in similar localities or in the same section of country.

The court cannot see how the defendants were harmed by an instruction that by the phrase "reasonable skill, care and prudence" was meant that degree of skill, care and prudence that an ordinarily capable physician would use in the same or like situation and condition of circumstances. That stated the degree of care and skill which has been approved. The court fails to see any material distinction between the skill, care and prudence of "an ordinarily capable doctor," and the "ordinary skill, care and prudence used by the average members of the profession," which was approved in two cases. Of course the jury could not have failed to understand that it meant an ordinarily capable doctor, ordinarily skilled in the use of such a machine.

Requirements for Practicing the Art of Healing

(Williams et al. v. Scudder et al. (Ohio), 131 N. E. R. 481)

The Supreme Court of Ohio says that notwithstanding it had before sustained the constitutionality of the medical practice act, both general and limited, it decided on another review of these constitutional questions, as though they were originally before the court; and it says that it gave unusual research and consideration to the questions herein involved. The action was one in injunction, brought by the plaintiffs for themselves and all others similarly situated, some 300 in number. The petition in substance declared that the acts of April 27, 1915, and March 11, 1919, both violated the federal and state constitutions, and that arbitrary discriminations had been made by the defendants against the practitioners of chiropractic. The supreme court, however, affirms a judgment of the court of appeals dissolving an injunction that was granted and dismissing the petition at the cost of the plaintiffs. It particularly holds that the statutory qualifications defined by Section 1270 of the General Code, as preliminary to taking an examination of persons desiring to secure a license to practice the art of healing in Ohio, are reasonable and valid statutory provisions, and are in full force and effect in the limited practice act, until lowered by any rule or regulation of the Ohio state medical board, pursuant to the statute. The act passed April 27, 1915, further regulating the practice of medicine and surgery, by authorizing the examination and registration of practitioners in the limited branches thereof, is a constitutional and valid exercise of legislative power. If it be constitutional for the general assembly generally to regulate the practice of medicine and surgery in the state, it would seem to follow that it had the same right to regulate any part and to provide in that regulation for a limited practice act.

Of late years the doctrine of conservation, the supreme court says, has received a new impetus in our American system of government. Originally, this doctrine was applied largely to mines, forests, water power and our natural resources. Later it was extended to hogs, cattle, buffaloes and wild animals generally and, strange to say, lastly it was applied to human beings. In primitive life every man was his own dentist, doctor, lawyer. Why? Because there were no specialists and one man was about as smart as another. In the course of our civilization and education we came to realize that in many departments of life special knowledge and training were highly necessary, and that the time had gone by when any person had the right to assume that he could skilfully exercise the healing art, advertise to such effect, and induce the public to believe he was so qualified, without the slightest evidence of such qualification.

It is surely only elementary to say that before one can treat a disease intelligently and efficiently he must know much about the nature and extent of that disease, the organs and parts affected, and even the cause of that disease. As the body politic is sometimes found to be in possession of undesirables, foreign to our government and inimical to our public welfare, that require immediate and drastic deportation to other shores, so the physical body is not infrequently found to be in the possession of some foreign growth whose immediate removal is indispensable to the health and life of the patient. To say that such knowledge in no way pertains to the chiropractor is sheerest nonsense, even to a layman. Hot and cold applications are ordinarily most efficacious for temporary relief, and very seldom harmful; but merely because they are generally harmless is scarcely a reason why they should be resorted to in all cases to furnish relief. The failure to give the natural and necessary relief called for by the condition of the patient, in the shape of some positive or affirmative action by way of treatment, may be as harmful as the giving of a treatment that is harmful per se, or in and of itself. What the patient often needs immediately is helpful treatment, and not merely harmless treatment. It matters not that the conditions or qualifications required by the law may be rigorous and exacting; the sole question is as to whether or not they are attainable by reasonable study and application.

Court Ordering Granting of License—Sufficient Hearing—Board Findings

(State Board of Medical Examiners v. Brown (Colo.), 198 Pac. R. 274)

The Supreme Court of Colorado holds that it was error for the district court, in considering this case on a writ of certiorari after the state board of medical examiners had refused petitioner Brown a license to practice chiropractic, to order the board to issue him a license. The supreme court says it was stated the court held the petitioner entitled to a license because the allegations of his petition as to his qualifications were not denied. In this there was error for two reasons: First, the petition required no answer; it had served its purpose when the writ issued, and its allegations were not to be taken as tendering an issue. Second, the review extends only to a determination, from the record alone, of the question whether the inferior tribunal regularly pursued its authority, and thereupon pronounced judgment accordingly. A cause heard on certiorari cannot be heard on its merits. Section 331 of the Code of Civil Procedure of Colorado provides that the writ shall be granted when an inferior tribunal, board, or officer exercising judicial functions has exceeded or greatly abused the discretion of such tribunal, board or officer, and there is no appeal, etc. By "abuse of discretion" is meant a failure of the tribunal regularly to pursue its authority. This does not include the commission of errors of law, or mistakes in the findings of facts.

The petitioner contended that he was entitled to a thirty days' notice of an adverse finding, and an opportunity to present additional evidence; and that failure to give him such notice constituted, on the part of the board, an abuse of its discretion. It appeared that his application was filed, March 7, and that on April 3 consideration of the application was deferred for further investigation. July 5, the applicant appeared before the board and submitted evidence in support of his application, which was dismissed "on the ground that the board was not satisfied that he possessed the qualifications required by the statute to entitle him to a license." As he appeared in person, and introduced his evidence on the hearing four months after the filing of his application, he was not entitled to have a further hearing on a thirty days' notice, or otherwise.

Complaint was made, also, that the board did not specifically find that the applicant did not possess the required qualifications. The dismissal of the application, on the grounds stated, after hearing had, was, in effect, a finding that the applicant did not have the required qualifications. The requirement is that the board find, i. e., reach a conclusion on the matter, not that it make findings in due form. While it would undoubtedly be better for the board to make formal findings, and make them a matter of record, the failure so to do was not to the prejudice of the petitioner. This disposed, also, of the claim that the petitioner was entitled to be advised as to which of the requirements for a license he was lacking.

The cases cited by the petitioner involving questions arising on mandamus were not applicable in this proceeding. In no event could the district court, on a proceeding of this kind, direct the granting of a license. If it found that the board had exceeded its jurisdiction, or failed regularly to pursue its authority, the duty of the court was to remand the cause to the board for a rehearing. The judgment rendered in this case is reversed and the cause remanded to the district court, with directions to dismiss the writ.

Courts May Order More Than One Physical Examination

(City of Valparaiso v. Kinney (Ind.), 131 N. E. R. 237)

The Appellate Court of Indiana, in reversing a judgment for $2,500 damages obtained by plaintiff Kinney for alleged permanent injuries to her left arm, elbow and shoulder, holds that there was an abuse of discretion in the trial court's refusal to order a second physical examination of the plaintiff by a physician or physicians to be appointed by the court. The appellate court says that the only physical examination that had theretofore been made under an order of court was had about eleven months after the plaintiff had received her injuries, and nineteen months before the trial of the cause. The injuries were of such a character that Nature would probably work a great change for the better in the course of time, even if a substantial cure was not effected. Under such circumstances it must be evident that knowledge of the plaintiff's condition at the time of the trial, which occurred about two and one-half years after the injuries were received, would have been very helpful to the court or jury trying the cause, in meting out justice between the parties.

It is well settled in Indiana that a motion to require a plaintiff to submit to a physical examination in actions of this kind is addressed to the sound discretion of the trial court, and that the exercise of such discretion is reviewable on appeal, and correctable in case of abuse; and it is clear to the appellate court that courts have authority to order more than one physical examination of a plaintiff in an action for damages on account of personal injuries. It is apparent that under certain circumstances a single physical examination may not fully accomplish, and possibly could not fully accomplish, the purpose sought, which is to enable the courts to obtain, as nearly as possible, the exact and full truth concerning the matters in controversy, in order that they may bestow on litigants equal and exact justice. When such circumstances exist, the reasons which lead courts to assume authority to order physical examinations in the first instance afford ample justification for a further exercise of authority in that regard. The amendment of a complaint, after a physical examination has been had, which alleges injuries not mentioned in the original complaint, a refusal to submit fully to a reasonable examination in the first instance, deception practiced by the plaintiff with reference thereto, a claim that unusual developments of a serious nature have resulted from such injuries, a long period of time intervening between the date of the first examination and the trial of the cause, the death of the physician who made the first examination under order of the court, or the inability of the defendant to procure his attendance at the trial, or to secure his deposition as a witness, may be cited as circumstances of the kind mentioned.

In holding that more than one physical examination of a plaintiff may be ordered under certain circumstances, this court, however, does not mean to imply that a defendant may demand either a first or a subsequent examination under an order of court as a matter of right, or that the making of such an order is not within the sound discretion of the court, subject to review on appeal for abuse in the exercise thereof, or that a physical examination should ever be ordered without sufficient cause, or so frequently as to annoy the plaintiff unduly, or at such times and places as to cause unnecessary embarrassment. On the other hand, this court holds that courts, in the exercise of their discretion, should fully protect plaintiffs in that regard.

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Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

Ocotber, 1921, **2**, No. 4

Pneumoperitoneum and Roentgenology as Aids to More Accurate Obstetric and Gynecologic Diagnosis. R. Peterson, Ann Arbor, Mich.—p. 349.

*Vaginal Supracervical Hysterectomy with Interposition of Cervical Stump for Cystocele and Procidentia Associated with Enlargement of Uterus. H. N. Vineberg, New York.—p. 368.

Interpretation of Vesical Symptoms in Gynecologic Diagnosis. F. E. Keene, Philadelphia.—p. 375.

Certain Dietary Factors in Causation of Sterility in Rats. E. Reynolds and D. Macomber, Boston.—p. 379.

*Management of Large Cystocele When Associated with Nonmalignant Disease of Cervix and Myomata Uteri. L. K. P. Farrar, New York. p. 395.

Sterility Studies. Simplified Methods in Diagnosis. W. H. Cary, Brooklyn.—p. 406.

Treatment of Syphilis Complicating Pregnancy. A. C. Beck, Brooklyn.—p. 416.

Vaginal Supracervical Hysterectomy.—In more than one third of the cases of procidentia and cystocele the uterus is found too large to be adapted for interposition. Decreasing the size of the uterus by excising a portion of the anterior wall or fundus has been found unsatisfactory on account of the rarity of obtaining primary union of the thickened and diseased walls of the uterus and the consequent high morbidity and mortality. A much more advantageous procedure, Vineberg asserts, consists in amputating the body of the uterus at the level of the internal os or higher up (if the patient be under 40 years of age) and interposing the cervical stump.

Management of Large Cystocele.—The technic of Farrar's operation so far as it pertains to the vaginal work, follows closely the method laid down by Ward and in the freeing and elevating of the bladder from within the abdominal cavity and the suturing of round and uterosacral ligaments to the stump of the cervix, is very similar to the technic of Polk. The bladder is completely freed from its vaginal attachments. Supravaginal hysterectomy is done and the round ligaments (and the tubes and ovaries if not removed) are fastened anteriorly to the stump of the cervix at the same level and to the uterosacral ligaments posteriorly to form a platform on which to spread out the bladder. Two stitches tack the bladder to the anterior part of the platform.

American Journal of Psychiatry, Baltimore

October, 1921, **1**, No. 2

Social Service and Outpatient Relations. J. B. Macdonald, Hathorne, Mass.—p. 141.

How State Hospital Cooperated with University to Meet a Community Need. H. I. Klopp, Allentown, Pa.—p. 159.

Extra-Institutional Activities for Mental Defectives in New York State. W. C. Sandy.—p. 167.

What Happened to Discharged Patients. G. K. Butterfield, Hathorne, Mass.—p. 177.

Neuropsychiatric Wards of the United States Government; Their Housing and Other Problems. J. J. Kindred, Queensborough, N. Y. —p. 183.

Diagnosis and Treatment of Dementia Praecox. W. A. White.—p. 193.

Study of "X": Psychometric and Otherwise. L. H. Ziegler, Washington, D. C.—p. 199.

American Journal of Roentgenology, New York

November, 1921, **8**, No. 11

*Effects of Roentgen Rays on Gastric Hyperacidity. L. Bryan and H. F. Dormody, San Francisco.—p. 623.

*Treatment of Leukemia. H. B. Thompson, Seattle.—p. 629.

Suboccipital Pott's Disease. C. M. Richards, San Jose Calif.—p. 632.

*Roentgen-Ray Treatment of Toxic Goiter. R. G. Allison, A. H. Beard and G. A. McKinley, Minneapolis.—p. 635.

Cases of Genito-Urinary Pathology. L. B. Groeschel, New York.—p. 641.

Developmental Rests in Cecum and Ascending Colon and Their Roentgen-Ray Diagnosis. R. A. Payne and F. C. Trahar, Portland, Ore.—p. 643.

Roentgenologic Aspect of Sprengel's Deformity. E. S. Blaine, Chicago.—p. 654.

Modification of Technic for Roentgenographing Upper Molars. C. A. Le Master, St. Louis.—p. 659.

*Radium Combined with Roentgen-Ray Treatment in Carcinoma of Breast. G. E. Pfahler, Philadelphia.—p. 661.

*Radium in Treatment of Carcinoma of Breast as Adjunct to Surgery. B. R. Kirkendall, Columbus, Ohio.—p. 668.

Dosage in Radium Therapy. G. Failla, New York.—p. 674.

Effect of Roentgen Rays on Gastric Hyperacidity.—Bryan and Dormody report favorable results from the use of the roentgen ray in the treatment of gastric hyperacidity; several patients have been free from symptoms from three to six months.

Treatment of Myelogenous Leukemia.—Two cases of myelogenous leukemia are reported by Thompson which have shown the usual very marked improvement following roentgen-ray therapy.

Roentgenotherapy of Exophthalmic Goiter.—Of twenty-seven cases of exophthalmic goiter without complications, subjected to roentgen-ray treatment, but not operated, twenty-four patients are well, both from the clinical and laboratory standpoint. The treatment has been complete for nearly eight months. The remaining three cases came to operation. One patient was definitely improved before operation, the other two patients were normal a few months after operation. Of six cases of postoperative hyperthyroidism, which had relapsed, one showed a definite cure. The other five showed no improvement. Of three cases of thyrotoxic adenoma none showed any response to roentgen-ray therapy. No bad results or complications, which could be attributed to the treatment, have occurred in any case.

Roentgen Ray and Radium Treatment of Breast Cancer.—Pfahler says the best procedure for the treatment of primary carcinoma of the breast will probably consist of anteoperative roentgen-ray treatment followed promptly by an operation, and again promptly by postoperative roentgen-ray treatment. For inoperable primary carcinoma of the breast a reasonable hope of success can be entertained as a result of radiation treatment by roentgen rays and by radium, providing it is skilfully and thoroughly used; and the earlier it is applied the greater will be the success. Recurrent and metastatic carcinoma from carcinoma of the breast can frequently be made to disappear completely by thorough and skilful application of either radium or roentgen ray, but probably better by a combination of both, and success can be hoped for providing the disease is localized to the area treated.

Radium and Surgery in Treatment of Breast Cancer.—Kirkendall is convinced that radium therapy, after a radical operation for cancer of the breast, greatly lessens the chances of recurrence. In local recurrences of breast cancer, its use often meets with success. In the nonoperative cases—those which were inoperable, and those which would not submit to surgery—the results obtained by radium treatment alone encourage one to its continued use. The preoperative and postoperative use of radium in cancer of the breast, is highly recommended, particularly in the virulent cases.

Annals of Surgery, Philadelphia

November, 1921, **74**, No. 5

*Results of Twenty-One Cases of Surgical Treatment of Aneurysm. W. O. Ott, Rochester, Minn.—p. 513.

*Transorbital Puncture of Gasserian Ganglion. C. M. Van Allen, New Haven, Conn.—p. 525.

*Methods of Procedure in Resection of Esophagus. C. Y. Bidgood, Baltimore.—p. 546.

Surgery of Lung. S. Lloyd, New York.—p. 557.

Gangrene of Extremity as Complication of Pneumonia. W. D. Wise and E. E. Mayer, Baltimore.—p. 565.

*Central Bone Abscess (Brodie's Abscess). C. A. McWilliams, New York.—p. 568.

Peptic Ulcer, Primary and Secondary. J. B. Deaver, Philadelphia. p. 579.

Experimental Intestinal Obstruction. H. B. Eisberg, New York. —p. 584.

*Fundamentally New Technic for Inguinal Herniotomy. M. Pitzman, St. Louis.—p. 610.

Incomplete Rupture of Axillary Artery. J. Eaves and P. Campiche, San Francisco.—p. 620.

Arterial Hematoma Following Traumatic Rupture of Popliteal Artery. A. H. Harrigan, New York.—p. 625.

Fragilitas Ossium. E. A. Vander Veer and A. M. Dickinson, Albany, N. Y.—p. 629.

*Technic for Leg Amputation. T. G. Orb, Kansas City, Mo.—p. 633.

Surgical Treatment of Aneurysm.—The results in the cases reported on by Ott seem to indicate that double ligation and excision of the sac is the method of choice in cases of

aneurysm of the small arteries, since shutting off their blood supply is not followed by untoward results. The method of gradual occlusion with clamps gave only indifferent or poor results in the cases in which it was tried.

Puncture of Gasserian Ganglion to Secure Anesthesia.—Transorbital puncture of the Gasserian ganglion, Van Allen asserts, furnishes a relatively simple means of securing block anesthesia for operations in the territory supplied by the trigeminus, and is fully justified in cases where general anesthesia is contraindicated.

Resection of Esophagus.—The skin-tube method, Bidgood says, should be the method employed in case of carcinoma and stricture of the esophagus, when cure by dilatation with bougies is not possible.

Central Bone Abscess.—Given a tender swelling of a bone in which traumatic periostitis, cyst, new growth and syphilis (negative Wassermann) can be ruled out, when associated with intermittent night pains, such a swelling according to McWilliams should always be explored and the medullary cavity opened.

New Inguinal Herniotomy.—The essential step in Pitzman's operation is to suture the transverse fascia and aponeurosis down to Poupart's inguinal before the peritoneal cavity has been closed. This technic is said to be universally applicable to all inguinal hernias, and is especially advocated for medium and large-necked hernias.

Technic for Leg Amputation.—Orr makes long anterior and short posterior flaps. From the edge of the posterior flap the skin and fat are dissected downward and a flap of fascia freed of sufficient length to turn upward over the cut end of the stump. The muscles are then divided 2 or 3 cm. below the point at which the tibia is to be amputated. The fibula is cut at least 1 cm. shorter than the tibia. Either before or after the bones are severed the periosteum is carefully removed about the cut ends for a distance of 0.5 cm. and the marrow is scooped out. The tibial crest is then removed for 2 to 3 cm., so that there will be no sharp points or edges beneath the anterior flap. Sharp or rough edges, if there be any, are made smooth by rongeur or coarse file. The nerves are then carefully freed, drawn out of the stump as far as possible, and injected with absolute alcohol. The nerve is then divided just below the injected point. All bleeding vessels are ligated. The entire mass of muscle is grouped together with one strong purse-string chromic suture, which suture crosses over the anterior beveled portion of the tibia. Additional sutures may be placed when necessary to properly fix the muscles together. If the mass of muscle appears too bulky and is likely to produce a bulbous stump, small portions of it may be excised. The already formed posterior fascial flap (which may have with it some of the thinned-out portion of the calf muscle tendons) is turned forward and sutured over the end of the entire stump. The anterior flap is then turned down and the fascia sutured in a few places. This gives two layers of fascia over the end of the bone. The skin is then very carefully closed, shaping the flaps to fit.

Boston Medical and Surgical Journal

Nov. 24, 1921, **185**, No. 21

Puerperal Sepsis and Its Prophylaxis. L. V. Friedman, Boston. —p. 617.
Diagnosis and Treatment of Neurosyphilis. L. H. Spooner, Boston. —p. 622.
Graded Effort in Convalescence. H. J. Hall, Marblehead, Mass.—p. 625.
*Effect of B. Acidophilus Milk on Cases of Chronic Constipation. H. A. Cheplin, Syracuse, N. Y., and J. I. Wiseman, Middletown, Conn. —p. 627.
*Measles, Study of Epidemic in Watertown, N. Y. I. W. Brewer, Watertown, N. Y.—p. 630.

Feeding Bacillus Acidophilus Milk in Constipation.—The chief object of the investigation reported on by Cheplin and Wiseman was to study the therapeutic value of the oral administration of *B. acidophilus* milk in cases of chronic constipation. The *B. acidophilus* was prepared in accordance with the method advocated by Cheplin and Rettger. Living twenty-four hour cultures were administered daily to the patients. With but few exceptions 500 c.c. of the milk product reenforced with 100 gm. lactose were ingested by the patients each day in two equal doses. At no time during the investigation were any special or modified diets prescribed, and the sour milk was consumed regularly in addition to the ordinary daily dietary regimen. No cathartics or laxatives were taken by any patient throughout the entire experimental period. In the eight cases studied the favorable effects of the *B. acidophilus* lactose milk feeding on chronic constipation was quite apparent. In most of the cases the response was prompt and daily evacuations were recorded. Although in some cases the influence of the ingestion of the *B. acidophilus* milk in 500 c.c. quantities was less pronounced at the start, quite an appreciable difference in the effect on the bowel movements was noted when the amounts of the *B. acidophilus* milk and added lactose were doubled. Within a few days after the ingestion of the sour milk and added lactose, daily stools were obtained and a transformation of the flora took place in which the usual mixed bacterial types gave way to a more simplified flora largely represented by *B. acidophilus*.

Control of Measles.—Brewer is convinced that until such time as a satisfactory vaccine is developed and the public educated to its use, the crux of the situation is the control of the "common cold." The isolation of "colds" will, without doubt, prevent measles and whooping cough, and will also be the means of bringing many cases of tuberculosis under treatment at a time when they have a good prospect of being cured.

Illinois Medical Journal, Oak Park

December, 1921, **40**, No. 6

Determination of Dental Focal Infections by Means of Radiogram. M. J. Hubeny, Chicago.—p. 433.
Plea for Phototherapy in Surgical Tuberculosis. E. Hoff, Seattle. —p. 435.
Several Important Points in Diagnosis of Pulmonary Tuberculosis. R. T. Pettit, Ottawa, Ill.—p. 437.
Diagnosis and Treatment of Cancer of Large Bowel. C. B. Davis, Chicago.—p. 441.
Factors Determining Efficiency of Operations on Stomach. W. W. Babcock, Philadelphia.—p. 444.
Use of Double Snares in Tonsil Operations. J. S. Clark, Freeport, Ill.—p. 448.
Influenza Bacillus of Pfeiffer: Its Nutrition and Its Relation to Respiratory Infection. D. J. Davis, Chicago.—p. 448.
Ex-Service Cardiopath. J. M. Patton, Chicago.—p. 451.
Subphrenic Abscess. J. N. Hall, Denver.—p. 454.
Immunization Against Diphtheria with Toxin-Antitoxin Mixtures. G. H. Weaver, Chicago.—p. 459.
*Relation That Exists Between Hypertension, Myocarditis and Nephritis. H. A. Christian, Boston.—p. 462.
President Harding Taken to Task for His Attitude on Sheppard-Towner Maternity Bill. M. G. Kilbreth, Washington, D. C.—p. 466.

Relation Between Hypertension, Myocarditis and Nephritis.—Christian emphasizes that today we know of no one final cause of hypertension. As to the mechanism, it seems pretty certain that it is caused by a disturbance in the small blood vessels, arterioles and smaller, of the body. There is observational evidence that in some patients hypertension bears some, even though an indirect, causal relation to nephritis and that both in hypertension and in some types of nephritis a lesion of small blood vessels is an important part of the causative mechanism of the processes. Very similar causative factors are operative in the production of myocarditis. In all three conditions disturbance in the small arteries constitutes an important part of the lesion.

Indiana State Medical Association Journal, Fort Wayne

Nov. 15, 1921, **14**, No. 11

Medicine and State Control. D. Ross, Indianapolis.—p. 371.
Lessen Anesthetic Risk. F. N. Shipp, Crawfordsville.—p. 374.
Acidosis. M. W. Lyon, Jr., South Bend.—p. 376.
"The Physician" — Relation of Profession to Some Disease Habits. F. B. Wynn, Indianapolis.—p. 380.

Iowa State Medical Society Journal, Des Moines

December, 1921, **11**, No. 12

Analysis of First One Hundred Admissions to Iowa State Psychopathic Hospital. L. G. Lowrey, Iowa City.—p. 453.
Standardization of Methods of Treatment in Orthopedic Surgery and in Industrial Surgery of Extremities and Spinal Column. R. B. Osgood, Boston.—p. 462.
Use of Digitalis. J. G. Carr, Chicago.—p. 472.
*Lesions of Cervical Sympathetic: Report of Three Cases. T. B. Throckmorton, Des Moines.—p. 479.

Lesions of Cervical Sympathetic.—Throckmorton cites three cases: in one the paralysis was due to malignancy; in the second case it was due to toxemia of pregnancy, and in the third the paralysis was caused by an irritation due to an enlarged thymus.

Journal of Orthopaedic Surgery, Boston

December, 1921, **3**, No. 12

Operative Methods and End Results of Disabilities of Shoulder and Arm. A. Steindler, Iowa City, Iowa.—p. 652.
Present Tendencies in Treatment of Congenital Club Foot. E. W. Fiske, Pittsburgh.—p. 668.
End Results in Operative Procedures for Infantile Paralysis, with Special Reference to Tendon Transplantation at Widener Training School for Crippled Children. A. B. Gill, Philadelphia.—p. 677.
Immobilization Treatment of Septic Knee Joints. F. R. Ober, Boston. —p. 689.
Removal of Meniscus from Knee Joint. A. H. Freiberg, Cincinnati. —p. 697.
*Myeloma of Vertebrae. W. G. Turner, Montreal.—p. 698.
Cause of Coxa Plana. M. Jansen, Leiden.—p. 706.

Myeloma of Vertebrae.—In the two cases reported by Turner pain in the back was the dominant complaint; one patient was 75 and the other 40 years of age. In the first case the pain was referred chiefly to the lumbar region, third and fourth vertebrae, also to the dorsal region, sixth, seventh, eighth and ninth vertebrae and to the right about 4 inches along the sixth, seventh and eighth ribs. No deformity of the column was present. Dorsal decubitus gave some ease, ventral decubitus increased the pain. The tenderness was over the same regions but varied in intensity when tried three or four times. No girdle pain. Reflexes normal; no sensory change; abdomen and thorax negative. The patient failed gradually and died in coma. Superficial examination of the vertebral column revealed only slight enlargement of the lumbar vertebrae without any deformity. On longitudinal section only a peripheral shell—very thin—of bone remained. The vertebrae were replaced by a soft reddish brown (myeloid) tissue. The intervertebral disks were relatively intact and these, with the external shell of bone, held the column together. A similar but less extensive process involved the ribs. The clinical cause and pathology of the second case was similar to that of the first case.

Kansas Medical Society Journal, Topeka

December, 1921, **21**, No. 12

*What Is Dementia Praecox? K. A. Menninger, Topeka.—p. 381.
*Sterility in Women with Particular Reference to Endocrine Causation and Treatment. J. Rotter, Parsons.—p. 384.
"Do We Profit by Our Mistakes?" W. E. Mowery, Salina.—p. 387.
Vitamins. L. C. Axtell, Newton.—p. 390.
Law for Doctor. L. Childs. Liability for Failure to Diagnose Dislocation or Fracture.—p. 394.

What Is Dementia Praecox?—Three points are emphasized by Menninger: (1) cases of the incipient dementia praecox are constantly occurring unrecognized; (2) the practical thing to do in these cases is, the diagnosis once made, the patient should be committed; (3) more facilities and opportunities for and interest in the subjects of research in mental diseases particularly in the matter of dementia praecox.

Cause of Sterility in Women.—Rotter cites three examples of sterility due to endocrine disturbances: (1) a case of primary sterility, due to a hypofunction of the posterior part of the pituitary and ovaries; (2) a case of acquired sterility, due to a disturbance of the ovarian, thyroid, and pituitary functions; and (3) an example of hyperactivity of part of the posterior pituitary gland and ovaries as shown by too much trophic and stimulating influence on the endometrium, thus interfering with the imbedding and retaining of the fecundated ovum. That the diagnosis made in the cases cited were correct was shown by the results obtained by the treatment.

Kentucky Medical Journal, Bowling Green

December, 1921, **19**, No. 12

Cancer of Breast. J. G. Sherrill, Louisville.—p. 761.
Malignancy of Uterus. L. Frank, Louisville.—p. 765.
Treatment of Malignant Uterine Conditions with Radium. W. Barrow, Lexington.—p. 770.
Necessity for Early Recognition of Cancer of Gastro-Intestinal Tract. J. H. Blackburn, Bowling Green.—p. 772.
Malignancy of Rectum. B. Asman, Louisville.—p. 775.
Treatment of Malignant Conditions with Radium. W. J. Young, Louisville.—p. 778.
Aids to Diagnosis in Medicine. H. E. Tuley, Louisville.—p. 790.
Pericarditis: Pneumonia: Case Report. J. W. Moore, Louisville.—p. 800.
Penetrating Wounds of Eyeball. C. W. Reynolds, Covington.—p 804.
Necessity of Early Diagnosis in Cancer. G. Aud, Louisville.—p. 806.
Cancer from Standpoint of Internist. W. F. Boggess, Louisville. —p. 808.
Cancer from Surgeon's Standpoint. C. G. Forsee, Louisville.—p. 811.
Roentgen-Ray and Radium Treatment of Cancer. W. J. Young, Louisville.—p. 812.
Ectopic Gestation: Probably Ovarian. Case Report. L. W. Frank, Louisville.—p. 821.
Case of Cardiospasm in Three-Year-Old Child. J. W. Bruce, Louisville.—p. 824.
Imperforate Anus: Case Report. J. R. Wathen, Louisville.—p. 827.
Some Causes of Headache and Their Treatment. W. J. Thomasson, Newport.—p. 829.
Case of Psoas Abscess Complicated by Appendicitis with Report of Case. W. F. Gardner, Carrsville.—p. 833.

Laryngoscope, St. Louis

November, 1921, **31**, No. 11

*Efficiency of Some Artificial Aids to Hearing. P. E. Sabine, Geneva, Ill.—p. 819.
Complete Spheno-Ethmoid Operation. S. Yankauer, New York.—p. 831.
Gangosa. H. Aarrowsmith, Brooklyn.—p. 843.
Septicemia and Death Following Streptococcus Tonsillitis. M. C. Myerson, Brooklyn.—p. 847.
Pulmonary Complications Following Nose and Throat Operations. C. R. C. Borden, Boston.—p. 851.
Relation of Internist to Diseases of Middle Ear and Mastoid Process. W. B. Chamberlin, Cleveland.—p. 862.
Direct-View, Self-Retaining Laryngoscope. M. Unger, New York. p. 866.
Case of Traumatic Abducens Paralysis. J. Friedman and S. D. Greenfield, Brooklyn.—p. 868.
Radium in Cancer of Larynx with Particular Reference to Dosage and Dangers in Its Employment. T. J. Harris, New York.—p. 872.
Modified Septum Speculum. G. D. Wolf, New York.—p. 877.
Improved Head Lamp. H. M. Hays, New York.—p. 878.

Efficiency of Artificial Aids to Hearing.—Viewed in the light of our present attainments in artificial aids to hearing, Sabine believes that the immediate prospects for the alleviation of extreme deafness by such means are not bright. However, recent developments in telephony, notably in the use of the thermionic vacuum tube as a means of amplifying telephone currents afford considerable grounds for hope of securing the necessary increase of intensity. The problems of securing increased amplitude without increased distortion of the wave form is one that presents many physical difficulties. It is essential, at the same time, to know the distortions of sound produced by the defects in the mechanism of hearing. It is obvious, therefore, that the general problem is one calling for highly specialized knowledge and skill in the fields of both otology and physics.

Missouri State Medical Association Journal, St. Louis

December, 1921, **18**, No. 12

Necessity for Popular Medical Education in Missouri and Some Methods by Which It May Be Secured. F. G. Nifong, Columbia, Mo. —p. 425.
Hospital and Medical Service in Rural Missouri. G. L. Noyes, Columbia, Mo.—p. 430.
*Treatment of Bronchial Asthma with Autogenous Defibrinated Blood. A. C. Henske, St. Louis.—p. 431.
Neuropsychoses of War and Peace. G. W. Robinson, Kansas City, Mo.—p. 435.
Roentgen-Ray Findings in Cases of Painful Back. A. O'Reilly, St. Louis.—p. 440.
Medical Ethics and Ideals. N. M. Wetzel, Jameson, Mo.—p. 444.
Pithiatic (Hysterical) Mask. F. R. Fry, St. Louis.—p. 448.
Some Factors in Tuberculosis. F. T. Fahlen, Silver City, N. Mex. —p. 450.

Autogenous Defibrinated Blood in Bronchial Asthma.—In the sixteen cases reported on by Henske no attempt was made at trying to identify the causative protein. All the patients gave a clear history of asthmatic attacks extending over a period of six months to thirteen years. Two of these patients were found to have syphilis, in one case hereditary in the other acquired. Both patients made complete recoveries after being placed on antisyphilitic treatment. In both, however, the treatment for asthma seemed to diminish the frequency and severity of the attacks. In each case ten injections of 25 c.c.

of autogenous defibrinated blood were made subcutaneously in the interscapular space. The results have been satisfactory and better than any other method that Henske has used. It has given permanent relief in 56 per cent., temporary relief in 25 per cent., and was of no benefit at all in 19 per cent.

Oklahoma State Medical Association Journal, Muskogee

November, 1921, **14**, No. 11

Clinical Nephritis. L. A. Riely, Oklahoma City.—p. 289.
Kidney Function Tests in Renal Disease. W. Langston, Oklahoma City.—p. 291.
Pathology of Nephropathy. L. A. Turley, Norman.—p. 295.
Treatment of Oblique Inguinal Hernia. H. Reed, Oklahoma City. —p. 300.
Treatment of Paralysis Attending Minor Nerve Injuries. R. V. Smith, Tulsa.—p. 302.
Functional Disturbances of Nervous System Due to Pelvic Reflexes and Anomalies of Internal Secretions. R. Grosshart, Tulsa.—p. 303.
*Case of Strangulated Hernia in Infancy. R. I. Allen, Nowata.—p. 305.

Strangulated Hernia in Infant.—Allen's patient was 4 weeks old. The hernia was of the direct inguinal variety; the loop of intestine involved was "dangerously dark" but after being released from the constriction of the external ring began to show signs of recuperation. All symptoms subsided following operation, and the convalescence was without consequences.

Philippine Journal of Science, Manila

July, 1921, **19**, No. 1

Expression of Octet Theory of Valence in Structural Formulas. G. A. Perkins, Manila.—p. 1.
Philippine Termites, II. S. F. Light.—p. 23.
New Species of Vincentia from Philippines. O. Staff, Kew, England. —p. 65.
*Preparation of Tikitiki Extract for Treatment of Beriberi. A. H. Wells, Manila.—p. 67.
Philippine Wasps of Subfamilies Scoliine and Elidine. S. A. Rohwer. —p. 75.
Higher Basidiomycetes from Philippines and Their Hosts. V. O. A. Reinking, Los Baños.—p. 91.
Permeability of Citrus Leaves to Water. F. T. McLean, Los Baños. —p. 115.

Tikitiki Extract in Beriberi.—By the method described by Wells, which is in use by the Bureau of Science, a clear thick syrup of good flavor is obtained. One mil of this tikitiki extract represents the active constituents of 20 gm. tikitiki, or rice polishings. There are two grades of tikitiki; that from the light-colored or white rice, and that from the dark or red rice. Experimentation with the tikitiki from the red rice did not give satisfactory results; the inactive substances were not easily precipitated nor wholly separable by centrifuge, and the extract obtained was of a very dark color and harsh in flavor. Tikitiki extract is demonstrating by its therapeutic action that it possesses a high percentage of neuritis-preventing substances and that it is a cure for infantile beriberi. The public welfare board requires 10,000 bottles of this extract monthly.

Tennessee State Medical Association Journal, Nashville

November, 1921, **14**, No. 7

Treatment of Neurosyphilis. W. H. Leake, Nashville.—p. 245.
Laceration of Cervix. L. E. Burch, Nashville.—p. 256.
*Case of Extraperitoneal Pyosalpinx. P. H. Wood, Memphis.—p. 259.
Negligence in Care of Cross-Eyed Children. A. C. Lewis, Memphis. —p. 262.
Unseen in Medicine and Surgery. G. W. Quilian, Atlanta, Ga.—p. 264.
Conservation of Menstrual Function. J. B. Haskins, Chattanooga. —p. 269.

Extraperitoneal Pyosalpinx.—The patient whose case is cited by Wood had been operated on previously for dysmenorrhea. A ventral suspension was done. She came to Wood complaining of pain and frequency of urination, with severe cramplike pains in the lower abdomen. On incising the abdomen Wood found an extraperitoneal pus pocket. A modified Gilliam operation had been performed, but the fallopian tubes were used as guy ropes instead of the round ligaments. The left tube was almost entirely outside of the peritoneal cavity, lying between the posterior portion of the left rectus and its deep fascia.

Texas State Journal of Medicine, Fort Worth

December, 1921, **17**, No. 8

Compression of Lung in Treatment of Pulmonary Tuberculosis. H. F. Gammons, Dallas.—p. 383.
Spontaneous Pneumothorax. I. S. Kahn, San Antonio.—p. 384.
Pregnancy in Tuberculosis. S. E. Thompson, Kerrville.—p. 387.
Treatment of Mild and Convalescent Tuberculous Patients with Limited Means. E. T. Shields, New York.—p. 390.
Sixty Years' Résumé in Treatment of Pneumonia. I. L. Van Zandt, Fort Worth.—p. 393.
Chronic Appendicitis in Women and Its Differential Diagnosis from Other Abdominal Conditions. J. E. Gilcreest, Ennis.—p. 398.
Some Practical Points in Differential Diagnosis Between Acute Salpingitis and Acute Appendicitis. B. A. Hayes, Lott.—p. 399.

West Virginia Medical Journal, Huntington

November, 1921, **16**, No. 5

Palliative and Radical Treatment of Uterine Fibroids. R. J. Reed, Wheeling.—p. 167.
Cholecystectomy Increasingly Frequent Operation of Choice in Dealing with Gallbladder Disease. W. H. St. Clair, Bluefield.—p. 170.
Blood Transfusion. L. D. Covert, Moundsville.—p. 175.
*Two Abdominal Pregnancies in Same Patient Following Supravaginal Hysterectomy. W. A. McMillan and R. H. Dunn, Charleston. —p. 183.
Anesthesia. R. McMaster, Huntington.—p. 186.
Nephritis. E. R. Logan, David.—p. 191.
Physical Diagnosis. C. E. Watson, Coketon.—p. 193.

Two Abdominal Pregnancies After Hysterectomy.—Because of a double pyosalpinx McMillan and Dunn removed the tubes, uterus and diseased ovaries of a woman aged 18. The right ovary, with about 1½ inches of the fimbriated end of the tube, being healthy in part was stitched up to the right fold of mucous membrane. The patient became pregnant and was seen again sixteen months afterward. On opening the experitoneum the first thing that presented itself was the thin amniotic sac filled with its fluid and unruptured. Directly above this and over toward the left abdominal wall was a thick wall of clotted blood that came from the separating placenta. The amniotic sac was snipped open. The baby was dead. It weighed 8½ pounds. It was believed to be a 7½ months pregnancy. Fourteen months after this second operation the patient again became pregnant. In the sixth month of pregnancy symptoms of acute abdomen appeared and the patient was again subjected to operation. The fetus was floating unattached in the abdominal cavity, but was about two-thirds enclosed on the right wall by what appeared as normal uterine tissue with the short distal end of the right tube, and about one half a normal appearing ovary on the right side. At the left side of this mass was the protruding amniotic sac with a bulging mass of bleeding placental tissue that had a strong attachment to the sigmoid flexure of the rectum. The baby weighed 4 pounds. The patient did not recover from the exereme loss of blood.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Dec. 3, 1921, **2**, No. 3179

*Varicocele in Female. W. E. Fothergill.—p. 925.
Forecasting: Prognostics of Some Anomalies of Heart and of Urine. W. P. S. Branson.—p. 926.
Relation of Carcinoma to Infection. W. F. Robertson.—p. 929.
*Pathology of Gastric and Duodenal Ulcer. A. G. Gibson.—p. 933.
Bone Graft. M. Mamourian.—p. 934.
General Anesthesia and Atmosphere in Operation Theater. J. R. Mackenzie and G. H. Colt.—p. 938.
*Decapsulation of Kidneys in Bright's Disease. T. H. Sanderson-Wells —p. 940.
Pasteurization of Milk Supply. S. G. Moore.—p. 941.
Erythema Scarlatiniforme. M. O. Raven.—p. 942.
Inguinal Hysterocele. C. C. R. Downing.—p. 942.
Case Quadruplet Pregnancy. H. Bateson.—p. 943.

Varicocele of Broad Ligament.—Bunches of varicose veins in the broad ligaments Fothergill says are a familiar sight to all who are in the habit of exploring the pelvis. Varicose veins in the pelvis are often seen in connection with fibroids and other new growths, in cases of old pelvic infection and also in cases of marked retroversion. Like other varicose veins, those in the broad ligaments are made worse by pregnancy and by occupations that keep the patient standing

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during long hours. Congestion and edema of the ovaries are constantly observed in these cases, and numerous small cysts are often seen after prolonged venous congestion, as well as overgrowth of fibrous tissue if the congestion is excessive. In some cases the internal secretion of the ovary would seem to be increased, at least for a time, for menorrhagia is a common symptom. But in other cases there is relative amenorrhea, which suggests sclerosis of the ovaries and atrophy of their essential tissue. The leading symptom is dull aching pain in the left side low down; it is often felt on both sides, and sometimes is confined to the right side. Young girls do not complain of this pain, but its onset is often preceded by a few years of congestive dysmenorrhea. The premenstrual and menstrual aching prolongs itself into the intermenstrual period, until the gnawing pain is practically continuous, except when the patient is lying down. The natural cure of the condition comes, in many cases, with the menopause, for there is then a marked reduction of the pelvic blood supply, often accompanied with the deposition of much fat, which may support the veins in some degree. If bimanual examination shows the pelvic organs to be normal in size, shape, consistency, and position, the leading symptom is sufficient to establish the diagnosis if there is no history of venereal or septic pelvic infection. The patient should be told to keep her bowels loose and to avoid standing, but to take plenty of active exercise—work or play. The most useful drugs are two old-fashioned mixtures—cascara, belladonna and strychnin; and quinin, iron and Epsom salt. Many patients find peace by taking a small saline aperient every morning. A change of employment often works like a charm.

Streptothrix as Cause of Gastric and Duodenal Ulcer.—A broth culture of a streptothrix of the species actinomyces, obtained from a case of acholuric jaundice, was injected intraperitoneally into a monkey. The animal preserved its condition and kept up its weight for seven months, after which it quickly failed, and was killed thirty-two weeks after the first injection. During the period of observation the animal was more apathetic than the controls, and for the last four months sat crouched in one corner of the cage. On palpation of the abdomen tenderness was first noticed six weeks after the first injection, and, except on one occasion, could always be elicited, more usually over the spleen, sometimes over the liver, and once or twice elsewhere. The spleen was felt throughout, but could never be said to be enlarged. At the necropsy it was found that an inflammation of the spleen with thrombophlebitis gave rise to infective emboli, evident in their effects in the stomach, producing ulcers and hemorrhage, in the liver and lungs producing hemorrhagic lesions; that in splenic anemia, and more rarely in acholuric jaundice, the gastric hemorrhage may be due in a proportion of cases to septic embolism and consequent inflammation of the branches of the vasa brevia.

Decapsulation of Kidney.—Wells maintains that this operation deserves consideration under two conditions: (1) as an emergency in eclampsia, uremia, suppression of urine, etc.; (2) in chronic cases, when medical treatment has failed after a thorough trial.

Journal of Neurology and Psychopathology, Bristol

November, 1921, **2**, No. 7

Relation of Psychoneuroses to Mental Deficiency. E. Prideaux.—p. 209.
*Incidence of Sclerosis of Cornu Ammonis and Convulsions in General Paresis. A. E. Taft, Boston.—p. 221.
Expiation Process in Case of Schizophrenia. H. Devine.—p. 224.
Case of Insomnia Following Encephalitis Lethargica. M. Coburn.—p. 249.
Case of Premature Senility (Progeria). C. Farran-Ridge.—p. 254.

Sclerosis of Cornu Ammonis in General Paresis.—Of fifty cases of general paresis, examined histologically by Taft, a history of convulsions was given in nineteen. Of these nineteen, all but one showed extreme loss of large pyramidal cells of the cornu ammonis; particularly those within the corpus dentatum. In some instances the cell degeneration extended into the presubiculum. The cell loss was accompanied by proliferation of large glia cells. In the entire group of cases there was one contrasting case with loss of cells in the cornu ammonis without a history of convulsions. In this instance there was no disappearance of cells within the corpus dentatum; only from a portion of the presubiculum. Thus, in the histologic material examined, there was found an almost exact parallel between the occurrence of convulsions and the presence of marked cell degeneration of the cornu ammonis in fifty cases of general paresis.

Lancet, London

Dec. 3, 1921, **2**, 5127

*Study of Aphasia. S. A. K. Wilson.—p. 1143.
*Eclampsia and Its Incidence. R. H. Paramore.—p. 1147.
*Value and Comparisons of Renal Efficiency Tests. J. D. Comrie.—p. 1150.
"Twilight Sleep" and General Practitioner. C. H. S. Horwitz.—p. 1154.
Domiciliary Treatment of Bone and Joint Tubercle. W. C. Rivers.—p. 1155.
*Guelpa's Method in Treatment of Gout and Glycosuria by Fasting and Purging. H. Lunn.—p. 1157.
*Case of Suppurative Monarticular Arthritis in Infant. A. Langwill.—p. 1158.
Case of Strangulated Obturator Hernia. A. E. Sawday.—p. 1159.
Case of Discharge from Umbilicus. F. Johnson.—p. 1159.

Aphasia.—Wilson is of the opinion that aphasia is part of a wider cerebral syndrome, namely, that of apraxia and agnosia. If aphasia is to be considered a disorder of symbolic thinking, it is important to grasp the fact that such disorder may reveal itself where no words, as such, come into the question at all. Yet unless some explanation such as that provided by the conception of apraxia and agnosia is offered, the limits of aphasia proper will be stretched unjustifiably. A patient who dresses himself wrongly or makes mistakes or "short-circuits" in performing any act, such as lighting his pipe, shows a disturbance which cannot by any legitimate means be regarded as aphasia; the disorder is certainly one of agnosia or of apraxia. By the utilization of these modern conceptions the way is paved for a more comprehensive insight into cerebral activities, both on the receptive and on the executive side.

Nature of Eclampsia.—Paramore's conception is that the maternal visceral lesions explain the toxemia in eclampsia. Such visceral lesions precede eclampsia. They cannot be merely terminal events in the disease. Sometimes there are no fits, and the case ends with coma; but coma cannot cause the visceral lesions. In the albuminuria, the presence of casts, vomiting, and manifestations of hepatic derangement we have evidence that a change in the kidneys and liver often occurs long before eclampsia supervenes. If the liver is not working sufficiently, a rise of amino-compounds (and allied bodies) in the blood must occur; and if simultaneously the kidneys are inactive, the percentage increase must become great. Such substances come largely from the intestine; and the importance of food, especially of protein food, in the rise of toxemia is well known, and in the treatment of these cases relative or complete starvation holds a high place. The toxemia which ends in eclampsia; Paramore says, is simply an aberration of normal metabolism, and eclampsia simply a uremia, distinguishable from other acute uremias only in the method of its production. The condition of the blood and urine in the preeclamptic state supports this view. Intra-abdominal pressure is intimately related with general metabolism, and its increase in pregnancy has been demonstrated. It is not surprising that if the intra-abdominal pressure is related to visceral metabolism, if its undue increase can cause metabolic aberrations, that such should show themselves more commonly in primigravidae, and especially in strongly muscular primigravidae. The proneness of such women to eclampsia is itself evidence that the toxemia is a physical, not a chemical disturbance.

Value of Renal Efficiency Tests.—The combination of the estimation of blood urea, of urea concentration in the urine, and of phenolsulphonephthalein excretion, Comrie says, gives reliable information as to the functional efficiency of the kidneys. The blood urea estimation should form a preliminary investigation. If it rises above 50 mg. per hundred c.c. of blood the condition is serious. If it is found to be persistently over 100 mg. recovery is not likely, and death will probably take place within a year. In uremia it may exceed 200 or 300 mg. before death. The blood urea may be normal while a marked degree of renal impairment exists; but in such cases the immediate prognosis is usually favorable. The

blood pressure shows no constant relation to the amount of blood urea; though when blood urea is permanently high the blood pressure is usually high. The phenolsulphonephthalein test, in Comrie's experience, is the most valuable individual test. An excretion, which takes place chiefly in the first hour and which in two hours reaches 70 per cent. or over, gives a good prognosis so far as the kidney function is concerned. An excretion of 50 per cent. for two hours in either renal or cardiac cases is compatible with complete restoration of health. An excretion of about 30 per cent. is compatible with prolonged life, though on a low plane of vitality. When the excretion does not rise above 20 per cent. in spite of treatment, death within a year may be expected. The urea concentration in the urine test is simple, harmless, and gives valuable information. The amount fluctuates more in individual cases than does the phenolsulphonephthalein excretion. A urea concentration over 3.5 per cent. indicates a satisfactory renal function; over 2 per cent. it is compatible with a fair degree of health; if it persists below 2 per cent., in spite of treatment, it is unsatisfactory.

Guelpa's Treatment of Gout.—Lunn is confident that the adoption of Guelpa's method of combining rather free purgation with fasting will prove of great benefit to patients suffering from diabetes, gout, colitis, and arthritis if the treatment be applied under medical care and direction. The importance of constant watching on the part of the medical attendant arises from the possibility of the development or increase of acidosis during the fast, as in my own case this year. In that event the fast should be discontinued when the acidosis is detected, and resumed after a few days. After a week of light diet the fasting can be resumed with a diminishing tendency to acidosis.

Suppurative Monarticular Arthritis in Infant.—Langwill's patient was aged 11 months. The left shoulder joint was distended with fluid; fluctuation well marked. On incising the joint capsule about an ounce of a thick yellow pus was allowed to escape. *B. paratyphosus* C was found in the pus.

Medical Journal of Australia, Sydney

Nov. 5, 1921, **2**, No. 19

Subacute Bacterial Endocarditis. D. M. McWhae.—p. 393.
Mr. Pepys. C. MacLaurin.—p. 395.
*Simple Operative Method of Reducing Obstinate Malposition in Colles' Fracture and in Supracondylar Fractures of Humerus. C. E. Corlette.—p. 397.
Note on Finding of Anchylostoma Duodenale in Intestines of Pig. J. Legg and J. A. Rheuben.—p. 398.
Reminiscences of Plague. E. H. Binney.—p. 398.
*Rare Type of Intracranial Tumor. T. H. R. Mathewson.—p. 400.
Imperforate Hymen. J. Allan.—p. 402.

Reduction by Operation of Colles' Fracture.—In the method described by Corlette an incision is made over the seat of fracture, and the tissues separated so that the distal fragment can be reached at the fracture line. A strong, sharp hook, or occasionally two hooks, are inserted, so that the points catch on the edge of the distal fragment, and traction is made in such a direction as to undo impaction and restore position. An assistant is required to manipulate the hand. Reduction having been achieved, the wound is closed and the patient is treated otherwise as in simple fracture. In supracondylar fractures of the humerus with backward displacement of the lower fragment and of the elbow, a very small wound was made with a tenotomy knife through the skin over each condyle, the wounds being only large enough to admit the hooks. Two strong, sharp hooks were inserted through the wounds and adjusted carefully so that the points engaged the proximal surface of the condylar fragment. An assistant counterextended at the shoulder and a second assistant slowly brought the forearm up into full flexion, while strong tension was exerted on the condylar fragment by the hooks on either side. The tractors were then removed and the limb put up in full flexion under the anesthetic.

Intracranial Tumor.—In Mathewson's case the brain was resting on a large, thin-walled cyst, which contained about 120 c.c. of straw-colored fluid. The wall of the cyst was continuous with the soft tissue of a new growth hanging down into the interpeduncular space and apparently replacing the infundibulum and tuber cinereum. The author does not state what the nature of the tumor was.

Archives des Maladies du Cœur, etc., Paris

September, 1921, **14**, No. 9

*Mechanism of Musical Heart Murmurs. L. Bard.—p. 385.
Roentgenoscopy of Heart from Left Side. Laubry et al.—p. 394.

Musical Heart Murmurs.—Bard discusses the conditions responsible for and the mechanism of the murmurs which resemble the cheeping sounds made by small chickens, *bruits de piaulement*.

Bulletin de l'Académie de Médecine, Paris

Nov. 8, 1921, **86**, No. 36

*"Traumatic" Pleuropulmonary Tuberculosis. G. Brouardel and L. Giroux.—p. 238.
*Colon Bacillus Septicemia. H. Méry.—p. 241.
*Regeneration of Nerve Tissue. Nathan and Madier.—p. 243.
Prophylaxis of Mushroom Poisoning. L. Azoulay.—p. 246.
*Epidemic Hiccup. Ducamp et al.—p. 249.

Traumatic Pleuropulmonary Tuberculosis.—Brouardel and Giroux are rather skeptical in regard to a traumatic origin of tuberculosis of lung or pleura, except when it has developed after a violent contusion of the chest which has roused to action some latent tuberculous focus which might never have been heard from otherwise. They urge supervision of persons known to have suffered from contusion of the chest, to learn what proportion develop pulmonary tuberculosis later.

Colon Bacillus Septicemia.—Méry comments on the prolonged course of the septicemia for which the colon bacillus is responsible, dragging along for months, with irregular waves of temperature suggesting malaria. The colon bacilli may pass into the urine, and the patient's serum may agglutinate isolated colon bacilli. An autogenous vaccine is often useful, as in a case described in which for five months there had been eleven or twelve day periods of fever followed by normal temperature for similar periods.

Regeneration of Nerve Tissue.—Nathan and Madier relate that a regenerating nerve is liable to send fibers into the interstices of a strip of loose connective tissue serving as a guide. The fibers from the two stumps may thus meet and the regeneration of the nerve be complete, even over a long gap. In one dog the experiment was a success, bridging a long gap, while in the second dog the end of the creeping nerve fiber had been turned back on itself by some obstacle.

Epidemic Hiccup.—The young woman died eighteen days after she developed intense hiccup with myoclonic movements of legs and abdominal muscles. Necropsy showed proliferation of neuroglia and degeneration of cells, mainly in the cervical spinal cord and vagospinal nucleus.

Bulletin Médical, Paris

Nov. 19, 1921, **35**, No. 47

*The Gap in Auscultation. Molle.—p. 925.

The Gap in Auscultation.—Molle explains the mechanism of the silent interval in ausculting the systolic and diastolic pressures. Instead of the normal auscultation curve, there is a silent gap in or near the center in certain conditions. In five cases described it was unilateral and he is inclined to regard it as due to spasm of the artery.

Encéphale, Paris

November, 1921, **16**, No. 9

Pathogenesis of Amaurotic Idiocy. G. Marinesco.—p. 481.
Abortive Forms of So-Called Suprarenal Virilism. H. Claude.—p. 491.
Chorea. C. I. Urechia.—p. 496.
The Syndrome of Lilliputian Hallucinations. R. Leroy.—p. 504.
Genital Phobias and Psychanalysis. A. Hesnard.—p. 510.
Chronic Mania. J. Hamel and P. Vernet.—p. 515. Cont'd.
Edema from Undernourishment. M. A. Prince.—p. 526.

Journal de Médecine de Bordeaux

Nov. 10, 1921, **92**, No. 16

*Physical Training. A. Hesnard.—p. 465. Idem. Id.—p. 469.
Physical and Physiologic Education. Pierre-Nadal.—p. 473.
Psychologic Study of the Horse. G. Rouhet.—p. 475.

Nov. 25, 1921, **92**, No. 17

Introduction to Study of Phthisiology. E. Leuret.—p. 501.
The Hemorrhagic Syndromes in Course of Typhoid. Tamalet.—p. 511.
Motor and Mental Sequelae of Epidemic Encephalitis. L. Massé and G. Le Bourgo.—p. 513.

Physical Training in France.—Hesnard gives an illustrated description of the methods of physical training in vogue at the Joinville school, the national center of physical instruction. He also describes the Lorient similar school for the navy. Nadal discusses the training for teachers in this line.

Journal de Radiologie et d'Electrologie, Paris

October, 1921, **5**, No. 10

*Radiology at Recent Congress. J. Belot.—p. 433. Cont'd.
*Radiologic Treatment of Uterine Fibromas. A. Béclère.—p. 449.

Radiology at Congress.—This is the first instalment of the addresses on roentgenology delivered at the annual meeting of the French Association for the Advancement of Science.

Roentgen-Ray Treatment of Uterine Fibromas.—Reviewed in these columns, Nov. 19, 1921, p. 1687, when published elsewhere.

Nourrisson, Paris

November, 1921, **9**, No. 6

*Pyloric Stenosis in Infants. Péhu and X. Pinel.—p. 337.
*Reducing Substance in Infants' Stools. A. B. Marfan and H. Dorlencourt.—p. 382.
Visiting Nurses in Child Welfare Work. P. Chatin.—p. 390.

Pyloric Disease in Infants.—Péhu and Pinel recall that pyloric stenosis in infants is a well defined clinical entity with a settled course. It is curable by operative measures, but it may terminate in a spontaneous cure, complete and definitive. Some ascribe the *maladie pylorique* to hypertrophy of the pylorus; others to a congenital malformation; others to hyperplasia of inflammatory nature; others to spasm alone. They give a long list of clinicians who have advocated medical measures only, but the Fredet-Rammstedt operation is simple, rapid, effectual, and harmless, and has thrown light on the pathogenesis of the condition. Nearly seven pages of bibliography, the titles set solid, are appended.

Reductase in Infants' Stools.—Marfan and Dorlencourt found the reducing substance most abundant the more alkaline the stools. There is much to sustain the assumption that the reductase is produced in the main by proteolytic microorganisms. It does not seem to exert a reducing action on bilirubin, and hence it is not responsible for putty colored stools; insufficiency of the liver must be incriminated for this.

Paris Médical

Nov. 12, 1921, **11**, No. 46

The Serologic Tests for Syphilis. Rubinstein.—p. 377.
*Treatment of Shock Phenomena. W. Kopaczewski.—p. 379.
The Hemorrhagic Incidents of Normal Childbirths in Primiparas. Barbillion.—p. 384.
*Arsphenamin Myopia. G. Milian and Périn.—p. 388.

Nov. 19, 1921, **11**, No. 47

Surgery for Children and Orthopedics in 1921. A. Mouchet and C. Roederer.—p. 393.
Tuberculosis of First Metatarsal Bone in Children. Sorrel and Bouquier.—p. 399.

Phenomena of Shock by Contact.—Kopaczewski comments on the light thrown on many pathologic conditions by the conception of shock as a physical phenomenon. There is (1) the cell shock, or anaphylaxis; (2) the humoral shock, from sudden flocculation in the blood or lysis of the formed elements; (3) the thromboplastic shock, the solid elements in the blood acting like a glass wall to form centers for coagulation, intravascular thromboplastic phenomena. The shock reaction in all its forms is colloidal and the modification of the colloidal balance which constitutes the sudden reaction in all these types is responsible for the clinical and histologic manifestations. Treatment should vary for each type: It should aim to prevent or arrest flocculation in the cellular type, which includes serum sickness, asthma, the reaction to tuberculin, etc. In the humoral type—which includes arsphenamin shock, shock from peptone, from antiserums, etc.—treatment should aim to be antilytic. In the thromboplastic type—which includes the shock from suspensions of micro-organisms and collobiases—treatment should aim to impede coagulation. He adds that there are plenty of old and tried measures in our arsenal to fight flocculation, lysis and coagulation.

Transient Myopia During Arsphenamin Treatment.—The woman of 27 developed nitritoid crises at the third series of neo-arsphenamin injections. Each injection induced a typical nitritoid crisis, accompanied for a day or two by intense albuminuria and transient myopia: 3 D for one eye and 3½ for the other. Vision was clear provided the fine print was held at the proper distance. Syphilis may affect the eyes in this way but generally only one eye. Epidemic encephalitis is also capable of producing it, but with this there are pupil changes as well.

Presse Médicale, Paris

Nov. 12, 1921, **29**, No. 91

*Action of Organ Extracts on Blood Pressure. H. Roger.—p. 901.
Arsphenamin Eruptions and Course of Syphilis. Benveniste.—p. 904.

Action of Organ Extracts on the Blood Pressure.—Among the results of Roger's research in this line is the discovery that an autolysate of kidney tissue contains a substance which seems to act on the pneumogastric as epinephrin acts on the sympathetic. Under the kidney extract the blood pressure drops, and the systoles become very slow and strong. He describes the technic used and the action of the extract on rabbits. The blood pressure curve after its injection resembled that with electric stimulation of the pneumogastric. The drop in pressure is as pronounced as with the latter, but it is definitive; there is no recuperation. With electric excitation, in normal animals, the diastole may be very protracted but the heart always recovers and goes on beating. The animals under the influence of the kidney extract were liable to develop fatal syncope, the heart action stopping abruptly in diastole, the respiration keeping up a little longer. He calls attention to this as possibly explaining sudden death in kidney disease, some kidney substance or product acting on the vagus, causing the fatal outcome. His experiments showed further that atropin was able to suppress this hypotensive action of the kidney extract, just as it suppresses the effect of faradic stimulation of the pneumogastric nerve.

Revue de Médecine, Paris

April, 1921, **38**, No. 4

*Meningeal Manifestations of Typhoid Origin. E. Cottin and C. Saloz.—p. 191.
*Differential Diagnosis of True Duodenal Ulcer, Without Complications. G. Parturier.—p. 214. Conc'n in No. 6, p. 340.

Meningeal Manifestations of Typhoid Origin.—Cottin and Saloz describe four types of meningeal involvement in typhoid: the cases in which the cerebrospinal fluid is clear and sterile; those with typhoid bacilli in the fluid; those with associated infection with the typhoid bacteria, the fluid purulent, and those in which the typhoid meningitis is primary and isolated, the only manifestation of the disease. They report a case of this latter type, the previously healthy woman of 35 being taken suddenly with agonizing headache, vomiting and syncope. Acute delirium followed, with fever of 104 F. and pulse of 100. Lumbar puncture gave relief and revealed the typhoid bacilli in the fluid. The blood was constantly sterile and did not give the agglutination reaction, but this was pronounced with the spinal fluid even late into convalescence. Recovery was complete in about seven weeks; there were no symptoms at any time from the intestines and no septicemia. The meningeal manifestations with typhoid usually precede the classic clinical picture of the disease, or follow it, or they may accompany typhoid septicemia without involvement of the bowel. They cite instances from the literature of each of these forms. The extra-intestinal lesions in typhoid generally locate at points damaged by old infection or other cause, in a goiter, in a gallbladder with calculi, in a malarial spleen, and in experimental lesions. In the case of isolated typhoid meningitis they report, the woman had had a needle break off in the spinal canal during an attempt at spinal anesthesia three years before.

Differential Diagnosis of True Duodenal Ulcer.—A similar article by Parturier, shorter than this comprehensive monograph, was summarized Dec. 17, 1921, p. 2005. He cites among other instances of unrecognized duodenal ulcer remote from the pylorus, a case in which the clinical picture was mistaken for Pott's disease, and the patient kept in a plaster cast for two years. In other cases an operation for gallstones was planned, or the disturbances were ascribed to angina pectoris. The clinical picture of ulcer in the second portion of the

duodenum differs from that near the pylorus, and he compares the symptoms in his twenty cases of the kind with those of other pathologic conditions which might lead to confusion, such as lead poisoning, kidney colic, nephroptosis, tabes, neuralgia, aortitis, and gastro-intestinal uremia, as well as gastric ulcer, appendicitis, pancreatitis, etc. He recapitulates in conclusion that the intervals of good health are the most characteristic feature of true duodenal ulcer. Other features are the good appetite, the nocturnal pain originating and spreading in the right hypochondrium, not accompanied by vomiting and not impairing much the general health; the pain sometimes, but not always, is relieved by eating; contracture of the right rectus muscle; blood in the stool, sometimes visible but usually revealed only by the chemical reactions of hematin; roentgenoscopy showing rapid evacution of the stomach; a tender point in the duodenum—the latter may be normal in outline or show an indentation or residual spot—pronounced hyperchlorhydria; the tender point in the neck; the one in the duodenum; the relief of pain with a deep inspiration, and the lack of relief from antipyrin and laudanum under which pain from the gallbladder and celialgia subside. The prognosis is graver the lower the location of the ulcer. Even after the most careful investigation and weighing of all the differential points, the exploratory laparotomy may reveal merely a patch of peritonitis below the liver, which requires only a gastro-enterostomy to relieve the patient permanently from the gastroduodenal symptoms and the dread of finding cancer.

May, 1921, **38**, No. 5

Sodium Methylarsinates in Therapeutics. H. Maréchal.—p. 255.
*Magic or Therapeutic Properties of Human Blood. J. Roshem.—p. 295

June, 1921, **38**, No. 6

Origin and Pathogenesis of Vascular Hypertension. C. Trunecek. —p. 319. Cont'd.
Itching of Nose as Early Symptom of Meningitis. G. R. Lafora.—p. 366.

Human Blood in Magic and in Therapeutics.—Roshem has compiled a long record of historical references to the use of blood in treatment of various diseases, especially epilepsy, and in magic. He quotes, among others, Pliny's description of the mother bargaining with the gladiator to let her epileptic son suck the blood flowing from his wounds, and adds that if the seizures had been neuropathic instead of actual epilepsy, the circumstances might well have produced such an impression as to restore the patient's balance.

Revue Médicale de la Suisse Romande, Geneva

May, 1921, **41**, No. 5

Prophylaxis of Venereal Diseases. J. Wintsch.—p. 265.
Horizontal Inferior Luxation of Patella. W. Rochedieu.—p. 305.
No Improvement Under Vaccine Therapy of Tuberculosis; Five Cases. Piguet.—p. 308.

June, 1921, **41**, No. 6

Retroperitoneal Pseudomyxoma. M. Askanazy.—p. 329.
Reinfection with Syphilis. R. Steinmetz.—p. 335.
*The Venous Blood Pressure. P. Roethlisberger.—p. 348.
*Blocking the Splanchnic Nerves. C. Perrier.—p. 355.
*Sudden Death in Heart Disease. G. Turrettini.—p. 362.
Tuberculous Sclerosis of the Kidney. R. Reymond.—p. 372.

Measurement of Venous Blood Pressure.—Roethlisberger records the residual pressure of the blood after it has passed through the capillaries. The subject sits with his back to the light, his elbow flexed at a right angle on a pile of books or other support, which brings the back of the hand on a level with the brow. The metacarpus is held vertical ,the fingers flexed, and a prominent vein in the hand is watched as the manometer cuff is inflated. He has not studied this method enough to interpret the findings, but he comments on the remarkable drop in the venous pressure with advancing age, as determined by this method. The figures were respectively, 14, 10 and 6 mm. mercury in three subjects, 20, 45 and 75 years old.

Blocking the Splanchnic Nerves.—Perrier applied Kappis' technic for regional anesthesia in eighteen cases, as he describes. The results encourage further use of the method although it partially failed in two cases of ileus. Others have reported failure in ileus, and Perrier is inclined to attribute this to the weight of the heavy loops of bowel. There was no modification of pulse or respiration during traction on organs, probably from the interruption of the reflex arc. There was no shock, no vomiting, but the analgesia was rarely complete, and there were some more or less disagreeable sensations, but not enough to require ether except in the two ileus cases mentioned.

Sudden Death in Heart Disease.—Turrettini compares the literature on the prognosis with auricular fibrillation with a case of chronically recurring paroxysmal tachycardia in which the woman of 54 died suddenly. Necropsy revealed merely extremely slight lesions in the nodule of Keith and Wenckebach's bundle. She had entered the hospital on account of recent mild pains and slight edema in one leg, with moderate dyspnea. The heart rate was 198, the pulse 100 to 120, the pressure low, and the ventricle rhythm so irregular that it was impossible to find any superposable segments in the cardiogram.

Policlinico, Rome

July 11, 1921, **28**, No. 28

Latent Amebiasis Simulating Malaria or Typhoid. G. Izar.—p. 939.
Injections of Calomel in Typhoid. G. Galatà.—p. 942.
Present Status of Gastro-Intestinal Arteriosclerosis. F. Curatolo.—p. 946.

Riforma Medica, Naples

Sept. 10, 1921, **37**, No. 37

*Perineal Prostatectomy. M. Pavone.—p. 866.
Four Cases of Paratyphoid. V. Ronchetti.—p. 871.
*The "Doll" Eye Sign. O. Cantelli.—p. 874.
Flushing the Small Pelvis in Treatment of Peritonitis. E. Aievoli.—p. 878.

Parlavecchio's Perineal Prostatectomy.—Pavone compares the various technics in vogue for prostatectomy, and gives an illustration of Parlavecchio's method which allows healing by primary intention, and the patient is up and about in eight or ten days. Even if a perineal fistula is left, this soon heals. His light prostatic tractor has three small blades, and has the advantage over others, he says, that it can be introduced through the natural route, without injuring the lining of the urethra. He prefers spinal anesthesia and a broad curve for the incision, and enlarges the two incisions in the posterior surface of the organ with the fingers. The prostate is pushed down conveniently into the field of operation by the tractor in the urethra, and the enucleation is completed with ordinary forceps or scissors. A retention catheter is not required for more than a day or two. In the four cases in which this technic has been applied, healing was by primary intention and the retention catheter was removed the third day. In the latest case, the patient pulled out the catheter the first night, and micturition proceeded naturally thereafter, the perineal wound healing by primary intention. In the third case, the urethral mucosa was injured and required suturing, so that the catheter had to be retained for a week. It became obstructed finally and the urine found its way through the perineal wound, but this fistula soon healed.

The "Doll" Eye Sign.—Cantelli calls attention to a dissociation between the movement of the head as it is bent forward and the lowering of the eyes. Also between the raising of the eyes and the movement of extension of the head. These various phenomena occur associated in the normal, and the lack of conjugated movements was noted as a sequela of epidemic encephalitis. He calls it the *fenomeno degli occhi di bambola* as the movement of the eyes recalls that of a doll with movable eyes.

Gaceta Médica de Caracas, Venezuela

June 15, 1921, **28**, No. 11

*Relapsing Fever in Venezuela. R. Pino-Pou.—p. 139. Conc'n. Idem. J. Iturbe.—p. 150.

Relapsing Fever in Venezuela.—Pino-Pou discovered in 1918 the first case of relapsing fever to be recognized in Venezuela. Bello, Sanchez and Tejera have encountered cases since, and Pino-Pou now has a record of twenty-three cases, and gives a detailed study of them and of recurring fever in general. He quotes Darling's conclusions in regard to relapsing fever in Panama, and Franco's in Colombia. The disease in Venezuela has certain special characteristics. As a rule there are three relapses, but there may be only one or more than three. The differential diagnosis is almost impossible

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without microscopic examination as the clinical picture may deceptively resemble that with malaria, influenza, typhoid or, in children, acute gastro-enteritis or meningitis. He gives a photomicrogram from one of his cases showing both the malaria parasite and the spirochete of relapsing fever in the blood at the same time. The spirochete seems to be identical with that observed in Panama and Colombia. House rats are susceptible to the disease, contracting it directly from man or from other rats, but monkeys, guinea-pigs, rabbits, dogs and domestic fowls proved refractory to inoculations. The spirochetes are scanty in the peripheral blood; sometimes 200 or 300 microscopic fields had to be examined before discovering one specimen. The intermediate host in Venezuela was found to be the biting tick, ornithodorus, but whether the talaje, the turicata or the fourcosus variety is not quite settled; each of the different investigators inclines to accept a different variety. He adds that probably *Cimex rotundatus* and *Cimex lectularius* play a part in the transmission of the disease. He succeeded in infecting rats by means of the latter. Pino-Pou's monograph is profusely illustrated; one of the cuts shows eight spirochetes agglutinated to form an eight-pointed star; this was discovered in the blood of one rat. In *Mus decumanus* the spirochetes were found in the blood the fifth day in one animal, and they had disappeared from the blood by the next day. The relapse occurred the seventh day. The disease to date has been found only in the western portion of Venezuela. One rat was found spontaneously affected.

Repertorio de Medicina y Cirugía, Bogotá

July, 1921, **12**, No. 10

*Reform in Medical Curriculum. Committee Report.—p. 518.
*Influence of Chicha on Nitrogen Metabolism. C. Torres Umaña.—p. 528.
Homeopathy. C. Aguirre Plata.—p. 538.
False Chilblains. P. J. Amaya.—p. 545.
*Puerperal Septicemia and Its Treatment. L. E. Moncada R.—p. 547.

September, 1921, **12**, No. 12

Case of Gonococcus Arthritis. J. Bejarano.—p. 636.
Magnesium Sulphate in Treatment of Constipation. Idem.—p. 641.
Child Welfare Exposition at Paris. E. S. de Santamaria Montoya.—p. 642.
Clinical Study of Yaws. B. Velasco C.—p. 647.
Tuberculosis. C. Aguirre Plata.—p. 675.

Reform of the Medical Curriculum.—This is the report of a committee of the professors who have been meeting weekly for several months.

The National Beverage of Colombia and Protein Metabolism.—Chicha is made from corn, but the fermentation is continued to actual putrefaction, with production of a ptomain. Torres Umaña experimented with it on six healthy subjects, the metabolic findings emphasizing the inhibiting action of the chicha on the nutritive processes. He urges the government to prohibit this method of fermentation.

Puerperal Septicemia.—Moncada's experience has been that other bacteria besides streptococci were usually involved in puerperal septicemia, and hence antistreptococcus serum cannot be relied on implicity. He describes five exceptionally severe cases with recovery under systematic intra-uterine treatment with neutral solution of chlorinated soda, or other disinfectant, supplemented by subcutaneous injection of a mixture of 2 gm. each of oil of turpentine and 92 per cent. alcohol in 200 gm. of physiologic saline. All the symptoms were aggravated for a few hours after the injection of turpentine, but then permanent improvement followed—an actual resurrection in some cases.

Deutsches Archiv für klinische Medizin, Leipzig

Oct. 21, 1921, **137**, No. 5-6

*Bence-Jones Albuminuria. E. Krauss.—p. 257.
*Infusion of Sugar in Heart Disease. P. Travers.—p. 284.
*Tests of Motor Function of Stomach. F. Demuth.—p. 292.
*Epinephrin Hyperglycemia. Brösamlen.—p. 299.
*The Salt and Water Metabolism with Diseased Kidneys. R. Siebeck.—p. 311.
*Catalase Index in Diagnosis of Pernicious Anemia. R. Neumann.—p. 324.
*Sources of Error in Measuring Blood Pressure. H. Hartz.—p. 337.
*Bactericidal Function of Small Intestine. Ganter and van der Reis.—p. 348.
The Metabolism as Edema is Subsiding. H. v. Hoesslin.—p. 359.

Bence-Jones Albuminuria.—Krauss succeeded in obtaining 15 gm. of crystallized Bence-Jones albumin from the urine of a myeloma patient. Crystals were obtained, he adds, only in five others of the more than 200 cases of Bence-Jones albuminuria on record. In his case the albuminuria seemed to be dependent on the nitrogen metabolism. Parenteral injection of the Bence-Jones albumin in other persons and in rabbits displayed a toxic action like that of any foreign protein. Repeated injections in the rabbit induced in time a nephrosis similar to the kidney disturbances evident in the patient from whose urine the prisms and fine needle crystals of the Bence-Jones albumin had been derived.

The Blood Sugar in Heart Disease.—Travers found no evidence of hypoglycemia in 102 patients with weakness of the heart from any cause. Although the sugar content of the blood was not below normal, intravenous infusion of a 10 or 20 per cent. solution of grape sugar had an unmistakably favorable effect, not only in cases of weak heart action but in other conditions of debility and after hemorrhage or much loss of fluid. But Büdingen's theory of hypoglycemia on which this treatment is based is disproved by Travers' research. A psychic influence from the sugar, as "food for the heart," may aid in the beneficial result.

Motor Functioning of the Stomach with Different Foods.—Demuth found that after meals consisting mainly of carbohydrates, the stomach emptied itself sooner than with protein foods. Meals with much fat lingered longer in the stomach than other foods, with the exception of sauerkraut which was voided most slowly. With gastric cancer, protein meals lingered longer than fat in the stomach. His tests were made with 300 gm. of the food being tested. The thirty-two subjects included four healthy persons.

Epinephrin Hyperglycemia.—Brösamlen found that considerable hyperglycemia followed regularly subcutaneous injection of epinephrin in healthy persons. It reached its highest point in an hour. Glycosuria was observed only in four of thirty-five tests and these four positive findings were in cases of exophthalmic goiter, obesity, advanced tuberculosis or leukemia. The epinephrin hyperglycemia in diabetics varied considerably.

The Salt and Water Metabolism with Kidney Diseases.—Siebeck concludes from his research that a single test of kidney functioning is of dubious significance. It is far more instructive to study the behavior of the kidneys during a prolonged change of salt and water intake. After a period of uniform, salt-poor diet, 5, 10 or 20 gm. of salt are added to the diet and the elimination of the salt, the total output of urine, and the increase in weight are recorded. Abrupt reduction of the intake of salt and of water often has a remarkable influence on the water and salt metabolism, and even after a more liberal diet is allowed, occasional days of restriction may prove very useful. The details are tabulated from seven cases treated on these principles.

The Catalase Content of the Blood in Diagnosis of Pernicious Anemia.—Neumann found the catalase content three or four times above normal in the two severer cases among ten of pernicious anemia. In the eight others it was within normal range.

Sources of Error in Estimation of the Blood Pressure.—Hartz explains that the elasticity of the wall of the segment of the artery between the cuff and the point where the systolic pressure is palpated varies in different persons, and that this is a source of error. The more relaxed the artery walls, the greater the error, as the palpated pressure is less.

The Bactericidal Function of the Small Intestine.—Ganter and van der Reis used for their research a metal cartridge which aspirated bowel content when the cartridge was opened, after it had been swallowed, by the influence of a magnet applied outside. Another form was arranged to expel its contents when opened by the magnet. The tests with the prodigiosus apparently demonstrated a pronounced bactericidal action in the small intestine in health. The small intestine contains an obligate flora, so the bactericidal action by its secretion is not an autosterilization but an autodisinfection.

Deutsche medizinische Wochenschrift, Berlin

Oct. 20, 1921, **47**, No. 42

Cutaneous Disease Due to Staphylococcus Albus and Aureus. P. G. Unna.—p. 1251.
Etiology of Accidental Diastolic Heart Murmurs. A. Lublin.—p. 1254.
Test Hemoclastic Crisis in Infants. E. Schiff and E. Stransky.—p. 1255.
The Diagnostic and Therapeutic Significance of the Endocrine Glands for the Pathology of the Stomach. F. Boenheim.—p. 1256.
Simplified Colorimetric Determination of Hydrochloric Acid in the Stomach. L. v. Friedrich.—p. 1258.
Significance of Scattering Rays in Deep Roentgenotherapy. F. Vierheller.—p. 1259.
Transfusion of Small Quantities of Citrated Blood. W. Weck.—p. 1260.
Diphtheria of the Umbilicus. K. Foth.—p. 1261.
Milk Dilutions in Infant Feeding. K. Ochsenius.—p. 1262.
Promotion of Asepsis in Midwifery. H. Kritzler.—p. 1263. Begun in No. 15.
Dry Yeast in Prophylaxis of Tonsillitis. H. Feriz.—p. 1264.
Safe and Quick Acetic Ether Method of Getting Rid of Head Lice. W. Schnell.—p. 1264.
Present-Day Knowledge of the Physiology of Sex Determination. T. Peterfi.—p. 1265.
Surgical Hints for the Practitioner; Furuncles and Phlegmons. G. Ledderhose.—p. 1267.

Medizinische Klinik, Berlin

Oct. 16, 1921, **17**, No. 42

Rudolf Virchow Centennial. O. Lubarsch.—p. 1253.
Virchow's Influence on Practical Medicine. H. Quincke.—p. 1254.
Renal Tuberculosis. E. W. Baum.—p. 1256.
Percussion of Aorta Under Roentgen Control. Jagic and Kreuzfuchs.—p. 1258.
Influence of One Disease on Another. J. Löwy.—p. 1259. Conc'n.
Index of State of Nourishment. E. Gerber.—p. 1261.
*Acute Barbital Poisoning. F. Boenheim.—p. 1263.
Cure of Pannus Under Jequirity. S. Klein.—p. 1265.
*Chemotherapy of Tuberculosis. Helwig.—p. 1266.
*Inactivation in Wassermann Test. H. Eicke.—p. 1269.
Ear Disease from Practitioner's Standpoint. Grahe.—p. 1270. Cont'n.

Acute Barbital Poisoning.—Boenheim relates that among the 286 cases of acute poisoning in Sick's service at Stuttgart in thirteen recent years, acute barbital (veronal) poisoning formed 5.7 per cent. of the whole. The drug had been taken with suicidal intent, and five died. These had all taken over 10 gm.; up to this amount the prognosis is not grave, although no specific antidote is known. Even with large doses of the drug, complete restitution may occur. Rosenberger, by promptly rinsing out the stomach, saved a patient who had taken 30 gm. of phenobarbital. The main symptom with barbital poisoning is the drowsiness to the deepest coma. Other features are the instability of the temperature, and the tendency to pneumonia. The latter almost inevitably proves fatal. There is no vomiting; the digestive tract does not seem to suffer. The main point of attack is the peripheral circulation. The drug seems to paralyze the walls of the capillaries so that vasomotor disturbances are constant. This may entail secondarily pulmonary edema. The suspicion of morphin poisoning is discredited by the good respiration and pulse, and the fact that the pupils react well to light. The play of the pupils, dilating and contracting at brief intervals, is characteristic. The absence of the abdominal reflexes, with retention or exaggeration of the tendon reflexes, is also instructive. Likewise the rapid shifting of the phenomena. The barbital can be detected in the urine. Caffein injections may be required. The danger is past after two days, provided pneumonia or pulmonary edema does not develop.

Chemotherapy of Tuberculosis.—Helwig discusses silicic acid, calcium and sugar in this connection. He thinks they are logically called for, and reports favorable impressions from their systematic use in pulmonary tuberculosis.

Technic for Wassermann Test of the Spinal Fluid.—Eicke explains that different elements in the syphilitic spinal fluid are affected by heat differently. By graduating the heat applied, we get different results at different temperature levels.

Münchener medizinische Wochenschrift, Munich

Sept. 9, 1921, **68**, No. 36

Observations on Epidemic Encephalitis. Kayser-Petersen.—p. 1137.
The Biologic and Clinical Significance of Lymphocytes for Syphilis and the Wassermann Reaction. S. Bergel.—p. 1138.
Peculiar Shortening of Metatarsal and Metacarpal Bones. J. G. Chryssospathes.—p. 1140.
Atrophy of the Bone (Sudeck) Following Burns. J. Dubs.—p. 1141.
Theory and Practice of Phototherapy. H. Picard.—p. 1142.
*Pneumonoconiosis and Asthma in Saw Mill Workmen. K. Gade.—p. 1144.
Surgical Diphtheria as Source of Diphtheria Epidemics. H. Spieth.—p. 1146.
*Percussion of the Suspended Thorax. C. Noeggerath.—p. 1147.
A Simple Aspiration Procedure with Drainage of the Pleural Cavity. J. Clemens.—p. 1147.
Gastro-Enterostomy or Resection in Gastric Ulcer? Kaufmann.—p. 1148.
Treatment of Furunculosis and Related Staphylococcal Suppurations with Polyvalent Staphylococcus Vaccines. R. Spaar.—p. 1149.
Total Reconstruction of External Ear. J. F. S. Esser.—p. 1150.
Diathermy in Gynecologic Inflammations. L. Tutscheck.—p. 1151.
Hemorrhagic Bladder Disorder in Chronic Relapsing Polyarthritis, Simulating a Bladder Tumor. H. Boeminghaus.—p. 1152.
Herpes Zoster in General Paresis. Kaiser.—p. 1153.
A Case Bearing on the Hypophyseal Theory in Regard to Diabetes Mellitus. R. Bleibtreu.—p. 1153.
Tearing of the Intestine Resulting from Patient's Attempt to Reduce a Femoral Hernia. R. Gutzeit.—p. 1154.
Bronchial Asthma and Tuberculosis of the Bronchial Glands in Children. E. Rüscher.—p. 1155.
Treatment of Empyema Fistulas with Pepsin Solution. Jenckel.—p. 1156.
A Maneuver to Facilitate a Gynecologic Examination in Severe Abdominal Distention. R. Hirsch.—p. 1157.
Sex Incidence in Exophthalmic Goiter; Its Causes. Weinberg.—p. 1157.
Estimation of Valvular Lesions. D. Gerhardt.—p. 1161.

Pneumonoconiosis and Asthma in Saw Mill Workmen.—Gade states that while pneumonoconiosis resulting from the inspiration of coal, metal, and mineral dust, and of vegetable material, in the form of flour and tobacco dust, has received widespread consideration in the literature, little has been said about analogous diseases resulting from breathing in the dust of wood fiber in saw mills, planing mills and similar industries. Under the microscope, the wood particles in the air are found to have many sharp edges and points. Under habitual inhalation of wood-fiber particles they set up a catarrhal affection of the respiratory passages, with many disagreeable symptoms and possibly disastrous results. Some wood fibers contain alkaloids and ethereal oils, which seem to produce an additional toxic effect. He therefore urges that greater attention be paid to the installation of mechanical devices to dispose of the dust, spraying, wearing of dust masks, ventilation, etc.

Percussion of the Suspended Thorax.—Noeggerath states that all physicians who, by means of roentgenography, have taken the trouble to check up on their percussion and auscultation findings will have frequently observed that paravertebral areas of relative dulness have no corresponding pulmonary and hilum changes in the roentgenogram. Also necropsies show up even more clearly the discrepancies between percussion findings and the actual anatomic conditions. In order to discover such discrepancies in time, he recommends percussion on the suspended thorax. An assistant takes a position facing the child and the physician. Then, with a hand flat against either side of the patient's head, he lifts him just off the floor. In this position the examiner will often discover on percussion that previous signs of scoliosis and dulness have completely disappeared. The finer mechanism of the process is not so plain, but it is probably due to changes in the vibratory capacity of the thorax and its contents. This procedure has been so useful to himself and his assistants during the last two years that he wishes it to become more generally known.

Therapeutische Halbmonatshefte, Berlin

July 15, 1921, **35**, No. 14

Transfusion of Blood of Relatives. M. Bürger.—p. 425. Conc'n No. 15, p. 457.
Treatment of Frost-Bite. H. Flörcken.—p. 430.
Salicylic Acid Poisoning from Cutaneous Application. O. Kiess.—p. 433.
Trials of Krause's Powdered Milk. C. v. Noorden.—p. 440.

Wiener klinische Wochenschrift, Vienna

Oct. 6, 1921, **34**, No. 40

A Case of Illuminating-Gas Poisoning with Profuse Hemorrhage into the Heart Musculature. G. Strassmann.—p. 483.
Relations Between Duodenal Ulcer, Appendicitis and Cholelithiasis. E. Schütz.—p. 484.
Experimental Investigations on a Child with Congenital Myxedema. G. Cori.—p. 485.
Cholelithiasis. L. v. Aldor.—p. 486.
Medicine in Relation to Theology. L. G. Dittel.—p. 487.
Roentgenographic Diagnosis of Tumors, Bones and Joints. R. Kienböck.—p. 488. Conc'n.

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Zeitschrift für Kinderheilkunde, Berlin

July 12, 1921, **29**, No. 5-6

*Nutrition Index and "Undernourishment." M. Pfaundler.—p. 217.
Progressive Spinal Muscular Atrophy in Infant. J. Duken and A. Weingartner.—p. 245.
Causes of Acidity of Infants' Stools. K. Scheer.—p. 253.
Congenital Valve Stenosis of Jejunum. H. Eitel.—p. 263.
*Sequelae of Epidemic Encephalitis in Children. II. F. Hofstadt.—p. 272.
*Research on Bacillus Bifidus. A. Adam.—p. 306.
*Length of Sojourn of Feces in Infants' Intestines. W. Kahn.—p. 321.
Fat and Cholesterin Metabolism in Infants. L. Wacker and K. F. Beck.—p. 331.
*Course of Intravenous Injections of Sugar in Infants. H. Beumer.—p. 352.
Etiologic Connection Between Varicella and Herpes Zoster. O. Jacobi.—p. 368.

Nutrition Standards.—Pfaundler discusses the various standards for estimating normal conditions of nourishment, saying that the best that can be expected from the standards in vogue is the *Körperfülle im geometrischen Sinn.* If the body is not properly filled out, this does not necessarily imply that the food has not been adequate before. This group includes many children—some of them healthy—who do not owe this condition—their lack of being properly filled out—to lack of food. No amount of food added to their diets will insure that their bodies will be properly filled out. In short, he concludes, his careful sifting of all the accepted standards for application on a large scale to detect the undernourished shows that not one is practicable. For solution of the problem, which is much more difficult than it seems, he suggests a system of functional tests, namely, the determination of the reaction to a test diet. The appetite of the children for the different meals, the variations in weight, etc., should be regarded, and the appetite for different articles of food. In the Quaker food relief, it was found that certain of the supposedly undernourished children did not go in to the eating room on days they knew certain dishes were served, while all were on hand on the "chocolate days." Those serving the food found it necessary to rearrange their schedule so that the children would not know what dishes to expect on the different days of the week. Pfaundler thinks that this catering to the children's appetite was a mistake. The children's appetite and lack of relish for certain dishes might be utilized as one of the elements in estimating their condition of malnutrition and need of food.

Sequelae of Epidemic Encephalitis in Children.—Hofstadt regards the derangement of the sleep rhythm as so characteristic of epidemic encephalitis that this alone justifies the present or retrospective diagnosis of the disease. The amyostatic syndrome, chronic chorea or athetosis and psychic disturbances are common, and also he has noted the development of an adipose-genital syndrome resembling dystrophia adiposogenitalis, and in some cases combined with hypergenitalism.

Research on Intestinal Bacteria.—In this third communication on this subject, Adam discusses the influence of the concentration of hydrogen ions in the medium on the development of *Bacillus bifidus.*

Length of Sojourn of Feces in Infant Intestine.—Kahn estimates from his study of this subject that the food passes through the digestive tract in infants in from four to twenty hours, fifteen hours being the usual average from intake to stool, but it is shorter in breast fed infants.

Intravenous Injections of Sugar in Infants.—Beumer never noted any toxic effects or fever in his parenteral injections in infants when fresh solutions were used. They were borne without injury by sick and healthy infants up to an amount proportional to 2.8 gm. per kilogram of weight, and in concentrations up to 70 per cent. solutions of dextrose. No benefit was derived from these injections in weeping eczema, and only moderate benefit in bronchopneumonia with stasis symptoms, but the effect was excellent in alimentary toxicosis and in atrophy with debility. The findings are tabulated from fifteen cases. Levulose was used in two. The sugar content of the blood dropped to its former level in from twelve to forty minutes.

Zeitschrift für urologische Chirurgie, Berlin

Nov. 21, 1921, **8**, No. 1-2

Pyelography for Minute Calculi. V. Blum.—p. 1.
*Perineal Prostatectomy. R. Jent.—p. 6.
*Results of Nephrectomy for Renal Tuberculosis. Wildbolz.—p. 17.
Cystoscope Holder. R. Picker.—p. 21.
*Harmless Technic for Pyelography. A. v. Lichtenberg.—p. 24.
*The Dynamics of the Bladder. O. Schwarz and A. Brenner.—p. 32.
Exfoliation of Bladder Mucosa after Wound of Cord. Esau.—p. 63.

Perineal Prostatectomy.—Jent discusses the anatomic consequences of perineal prostatectomy by Wildbolz' technic. He resects the posterior portion of the prostatic urethra, directly back of the verumontanum and up to the bladder. The mouth of the bladder, with its internal sphincter, is then sutured with several catgut button sutures to the anterior portion of the prostatic urethra. Jent gives an illustrated description of three cases that came to necropsy three weeks, one year and two years after the operation. They show that the adenomatous prostate by this technic is removed as thoroughly, while the sound parts are respected as well as by any suprapubic method. The technic thus answered its purpose perfectly.

Nephrectomy for Renal Tuberculosis.—Wildbolz reports 61.5 per cent. cured and 8.7 not cured in his 317 cases after an interval of from one to ten years or more since the nephrectomy for renal tuberculosis. About 29.9 per cent. have died. In the 125 cases operated on over ten and fifteen years or more ago, 55.7 per cent. are cured, and only 3 show any signs of a tuberculous process elsewhere. In about a third of his total of 445 nephrectomies, a tuberculous abscess developed months or years afterward in the stump of the ureter which he had buried after severing it with the actual cautery and ligating with catgut. But the abscess ran its course harmlessly. It healed in a few weeks after spontaneous evacuation as a rule; only a few were left with a fistula for a few months or a year, secreting a little. In these cases the ureter had been severed close to the kidney. It is better, he thinks now, to cut the ureter 10 or 15 cm. below, carefully refraining from separating it from the surrounding tissues so as not to impair its vitality. The fate of the patient is usually decided in the first three years, although he has seen recurrence five and six years after an apparently complete cure. In the hundreds of cases of renal tuberculosis he has seen in the course of his practice, he never knew of but one instance of an apparent cure under medical measures alone. See also Vienna Letter, December 31, p. 2133.

Safe Technic for Pyelography.—Lichtenberg insists that the contrast substance chosen must be one that does no harm if it gets into a vein. He therefore rejects all colloidal solutions, ascribing the by-effects with silver salts to their colloidal structure. After extensive research, he has selected a 25 per cent. solution of sodium bromid as superior to all other contrast fluids for the purpose of pyelography. The use of this fluid seems to render the procedure as harmless as a simple catheterization of the ureter.

Dynamics of the Bladder.—This is the eighth article in Schwarz and Brenner's series of studies on the physiology and pathology of bladder functioning.

Zentralblatt für Chirurgie, Leipzig

Sept. 24, 1921, **48**, No. 38

The Dangers of Ethyl Chlorid. G. Lotheissen.—p. 1375.
*Perforated Gastric and Duodenal Ulcer. H. Brütt.—p. 1378.
Operative Treatment of Varicocele, without Injury to the Spermatic Cord or the Scrotum. L. Isnardi.—p. 1382.
Gunshot Injuries of Renal Vessels. M. Molnár.—p. 1384.

Oct. 1, 1921, **48**, No. 39

Exostoses on Metatarsal Bones. C. Deutschländer.—p. 1422.
A Substitute for Adhesive Plaster Bandage in Hare-Lip Operations. H. Fründ.—p. 1426.
Spatula-Scissors for Operations on Peritoneum. E. Hoffmann.—p. 1429.

Radical Versus Conservative Operation in Perforated Gastric and Duodenal Ulcer.—Brütt reports in a consecutive series of about 140 operative cases of acute perforated ulcer a mortality of nearly 40 per cent. This he regards as a satisfactory showing for a long, consecutive series. Of those surviving the operation, 53 who had been operated on over

a year previously were reexamined, and of these 47 per cent. were free from all symptoms, while 12 (67 per cent., taking the two groups together) had complained of only slight symptoms. There was a pronounced relapse in 7 cases, or 12 per cent. In 5 of these 7 cases there were renewed, severe hemorrhages. There were either new or (at the first operation) undiscovered ulcers or peptic jejunal ulcers. Only after a long, strict treatment could the hemorrhages be brought under control. This high percentage of relapses, he thinks, speaks in favor of a radical procedure, provided circumstances permit. New hemorrhages following simple gastro-enterostomy and simple oversuturing of a perforated ulcer are not surprising when we consider how frequently—in the duodenum, especially—multiple ulcers appear. In 50 fatal cases of perforated ulcer, he found in 36 per cent. multiple ulcers at necropsy (the sites of the perforated ulcer having been near the pylorus or in the duodenum in 62 per cent. of the cases).

Zentralblatt für innere Medizin, Leipzig

Oct. 1, 1921, **42**, No. 39

Late Results in Cases of Tuberculosis in Which the Friedmann Treatment Was Used. C. Klieneberger.—p. 769.

Acta Pediatrica, Stockholm

March 15, 1921, **1**, No. 1

*Acute Digestive Disease in Infants. C. E. Bloch.—p. 1.
*Hysterical Spasm of Esophagus in Children. S. Monrad.—p. 29.
*Hair Ball in Stomach of Child. S. Monrad.—p. 39.
*Rumination in Infants. W. Wernstedt.—p. 45.
*Sugar Content of Blood in Infants. E. Nystén.—p. 79.
*Laboratory Tests for Whooping Cough. A. H. Meyer.—p. 99.
*Infantilism of Intestinal Origin. A. Lichtenstein.—p. 105.

Acute Digestive Disease in Infants.—Bloch classifies the mild form as acute dyspepsia; a more severe form as acute gastro-enteritis; a third form in which the acute gastro-enteritis develops in the course of chronic dyspepsia; and the fourth, symptomatic diarrhea. His experience at the Copenhagen general hospital has confirmed that acute gastro-enteritis is an infectious disease, the work of some member of the typhoid-colon group. The clinical picture seems to be about the same with typhoid, paradysentery, paratyphoid bacteria and the colon bacillus. In his 310 cases in this group, the mortality was 24 per cent., or only 17 per cent., omitting those that died within twenty-four hours. In the 77 cases of acute gastro-enteritis in infants with chronic dyspepsia or atrophy, the mortality was 30 per cent., or, corrected as above, 26 per cent. In 217 cases of acute gastro-enteritis examined bacteriologically, paradysentery bacteria were found in 10 per cent.; typhoid bacilli were found once, and paratyphoid in 5 cases. Among the 21 paradysentery cases, the smallest and weakest children seemed to present the disease in its mildest form; the severer cases being in older children and in robust infants. In treatment of acute gastro-enteritis, he stops all food and allows nothing but water, preferring to give it in the form of tea on account of the stimulation from the tea. He keeps up the restriction to water for one or two days, very seldom for three days, and then gives fresh boiled milk plus two parts of water, without sugar. He regards this as the lightest and simplest diet, and keeps it up until the symptoms of the toxicosis have disappeared, but does not continue it for more than a week. Then he dilutes the milk less or gives a milk mixture with 2 per cent. sugar. The slow pulse, subnormal temperature and collapses are combated by ether, camphorated oil, digitalis or caffein. (In English.)

Hysterical Spasm of the Esophagus.—In one of Monrad's three cases the child of 5 had actually swallowed a caustic, but without apparent damage until several months later, after hearing stories of persons unable to swallow after drinking lye. The second patient was a boy of 5 and the spasms occurred before the child was a year old, which misled the diagnosis, a congenital diverticulum seeming probable. The spasm changed its location in this case; when first examined it was 25 cm. from the teeth, but, on a second examination, only 15 cm. below the teeth. The child's elastic esophagus did not seem to suffer from the effects of the distention. In the third case, hysterical anorexia in the second and third year of life had been ineffectually combated for several years, and the child when nearly 6 was brought to the hospital for treatment. After considerable improvement she was taken home, but the condition then became aggravated to actual spasm of the esophagus. The parents applied to a surgeon who diagnosed a diverticulum and told the parents the stomach would have to be incised preliminary to the operation on the esophagus. The previous hysterical anorexia was the basis for Monrad's assertion that merely hysterical spasm of the esophagus was involved, and under treatment by introduction of a large bougie, plus suggestion, clinically normal conditions were promptly restored. But the tendency to hysteria persists, and psychotherapy will probably have to be continued for some time before the hysteria of this child can be eradicated. (In French).

Hair Ball in Stomach.—Monrad says that the case he reports in a girl 3 years and 9 months old is the youngest of the seventeen operative cases of trichobezoar he has found on record, all in girls. The ball formed a cast of the stomach and upper duodenum. (In French.)

Rumination in Infants.—Wernstedt gives an illustrated study of 7 cases of rumination in infants. He is inclined to regard it as a habit, like sucking the thumb, in most cases, but occasionally there may be a pathologic factor, some spasm in the digestive tract or spastic condition in the abdominal wall. Giving the food in a less fluid form generally breaks up the habit, but diverting the attention is even more effectual, and a combination of the two is advisable. In one case the cure was promoted by hanging toys over the bed. (In German.)

Sugar Content of Blood in Infants.—Nystén tabulates the findings in repeated tests on 21 healthy infants and in 21 with various nutritional disturbances, and compares his results with those of others in this line. The sugar content of the blood was always high in severe dyspepsia and very high in toxicosis, but was within normal range in the infants with atrophy. (In German.)

Laboratory Diagnosis of Whooping Cough.—Meyer's experience with culture mediums on which pertussis suspects have coughed has already been mentioned in these columns. In 1,665 specimens sent in for examination, the Bordet-Gengou bacillus developed in 970. The work was done at the official Serum Institute at Copenhagen, an aluminum box with the culture material being sent by mail or messenger on demand by mail or telephone. He gives the details for making the durable potato-glycerin-agar-sugar culture medium to which defibrinated horse blood is added when the box is to be sent out. The patient coughs into the box, but does not expectorate in it. In specimens from the catarrhal stage, the bacilli were found in 75 per cent.; in the first week of the spasmodic phase, in 62.5 per cent.; second week, 70; third week, 53; fourth week, 47, and fifth week or later, in 16 per cent. (In English.)

Infantilism of Intestinal Origin.—Lichtenstein refers to cases of gastro-enteritis or other digestive disturbance persisting so long that the child is actually stunted in its growth. In 8 of his 9 cases of this kind a tendency to spasmophilia was pronounced; 4 presented actual tetany and 3 laryngospasm. There was achylia in the 6 tested for it. His records show the patience and perseverance needed to realize the cure, but the results were most gratifying in some of the cases. A return to breast milk, even long after weaning, may be necessary.

Ugeskrift for Læger, Copenhagen

Oct. 20, 1921, **83**, No. 42

*Stimulating Action of Small Doses of Roentgen Rays. S. Nørdentoft.—p. 1353.
Sweat Band Dermatitis. O. Jersild.—p. 1357.

Stimulating Action of Small Doses of Roentgen Rays.—Nordentoft summarizes the recent work of Stephan and of Brock in this line in treatment of psoriasis by roentgen irradiation of the thymus, of the pancreas in diabetes, and of the kidneys in glomerular nephritis. Large doses aggravate the pathologic condition, while small doses seem to have a curative action, stimulating the cells to normal functioning. Nordentoft comments that even if only part of all this is confirmed by others, an entirely new field is opened for radiotherapy.